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THE UNITED STATES DEPARTMENT OF AGRICULTURE

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ITS STRUCTURE AND FUNCTIONS

MISCELLANEOUS PUBLICATION No. 88 rev.
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UNITED STATES
DEPARTMENT OF AGRICULTURE
MISCELLANEOUS PUBLICATION No. 88

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The UNITED STATES DEPARTMENT of AGRICULTURE

Its Structure and Functions

BY

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Office of Information

WITH THE ASSISTANCE OF OFFICIALS
IN ALL THE BUREAUS AND OFFICES
OF THE DEPARTMENT

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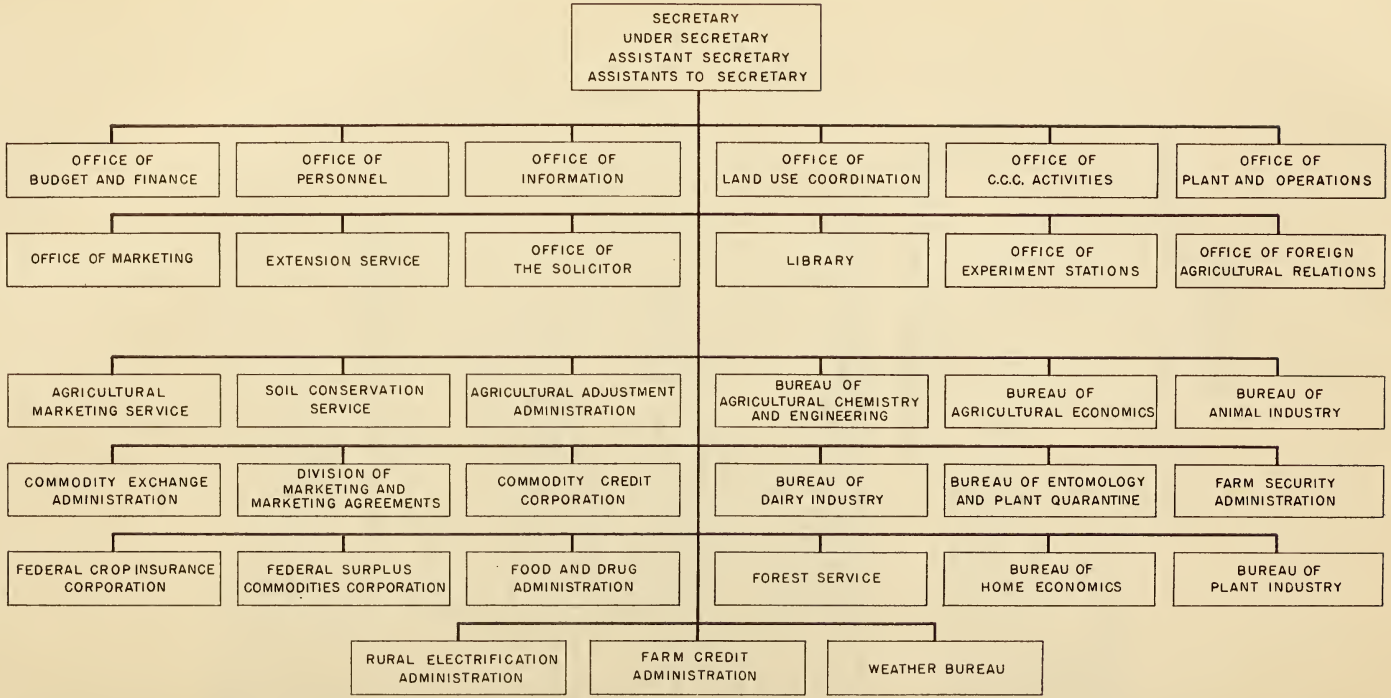
UNITED STATES DEPARTMENT OF AGRICULTURE



THE DEPARTMENT AS A WHOLE

INTRODUCTION

Change and development in the United States Department of Agriculture are more rapid today than ever before. This is because agriculture's problems, and many related urban problems, are changing rapidly. Many of these problems have economic and social as well as physical causes. For example, regional devastation from droughts and wind erosion are largely the outgrowth of misdirected land settlement and of excessively competitive use of natural resources. The importance of the land in flood control has drawn attention to the interdependence of social and physical factors. Retarding the run-off from slopes is a cooperative undertaking which involves individual land occupiers and local, State, and Federal agencies. In fact, most maladjustments in agricultural production and land use can be corrected only by governmental and private action together. Taken together, agriculture's problems of production, marketing, and land utilization present a great new challenge to the Federal agricultural agency. Congress has clothed it with the necessary powers to meet this challenge, and the Department has proceeded to develop the requisite agencies, facilities, and procedures.

There was no alternative. Expansion during the World War left us with surplus farm capacity. Our change to the creditor position, coupled with Europe's effort to be more self-sufficient, reduced our farm exports. Restrictions multiplied on international trade. New competition in farm products developed in Brazil, Argentina, Australia, Canada, and elsewhere. Economic crises disturbed the relationship between agriculture and industry in the United States and throughout the world. Inevitably the tasks of the Department increased in number and altered in character.

Added to the nonfarm causes of farm distress were problems more wholly agricultural in character—problems of land use and misuse, of land tenure, and of rural migration. Suddenly we woke up to the knowledge that the free or cheap land was all gone, that land mistreatment was rife, that the farm population was losing the ownership of the farms, and that both the rural and the urban unemployed were pushing onto land that should not be cultivated. More people were on the farms than could get a living from them in the accustomed ways. The Nation faced a choice between driving them off, through ruthless price deflation and pressure of debt, or helping them to get a better living with less competition and less destruction of the soil. Practically, there was no choice, since wholesale farm abandonment would have meant general economic break-down.

PURPOSE OF THE PUBLICATION

This publication shows some effects of these problems and of the resulting authorized policies in terms of the Department's altered structure and functions. The Department has become virtually a new institution. Responsibility for action programs has carried it far beyond research, extension, forest conservation, and market regulation, the tasks which formerly constituted the bulk of its activities, and involved it in extensive and detailed practical collaboration with State agencies and farmers. Nevertheless, the Department has not broken with the past, or started jobs without historic roots. Its present tasks are the natural outgrowth of earlier ones, and of the increasing pressure of steadily growing agricultural wants. The Federal agricultural agency is a product of the same forces that have molded our agricultural system; it is the response of the Federal Government to agriculture.

First in the publication is an outline of the Department's duties, which comprise five main categories: Research, planning, education, action, and regulatory. Each of these tasks is discussed later. Next is a short account of the origin and evolution of the Department; then a description of the present structure. In 1938 the Secretary of Agriculture made extensive changes in the organization with the object of bringing related functions together, and of facilitating local, State, and Federal cooperation. Broadly, the Secretary regrouped the various activities, established a central planning agency, and provided for final recommendations to the Secretary by an agricultural program board. This was essential because the older organization, with bureaus largely autonomous, could not cooperate efficiently in the coordinated local, State, and national planning that under present circumstances is necessary. Moreover, with each agency responsible for its own action, conflict and confusion were unavoidable. Only coordinated planning and action could produce administrative unity and bring the programs into harmony. The steps taken form the subject of the chapter entitled "The Present Structure."

THE SEVERAL BUREAUS AND OFFICES

Following this general survey, which describes the shape and character of the Department as a whole, are chapters on the several bureaus and offices. Here the reader will find particulars as to the origin and development of all the main branches of the Department's work, and outlines of current activities in research, extension, regulatory law administration, and action programs. This part of the publication deals with the inner workings of the several bureaus and offices, rather than with their interdependence and coordination. Nevertheless, the connection of each unit with the others remains apparent, and emphasizes the total integrated approach to farm problems and related urban problems through local, State, and Federal teamwork.

OBJECTIVES AND DUTIES

As 1 of the 10 major executive branches of the Federal Government, the United States Department of Agriculture is a research and service institution for the general welfare. One of its principal jobs is to help the farmer, primarily in solving his problems of production, of marketing, of farm organization, of land tenure, and of land utilization. Hence, it has been called the farmer's branch of the Government. Actually it is much more than that; it serves the urban consumer as well. Sometimes, indeed, the nonfarmer benefits most, because science can guarantee the Nation's food supply more surely than it can guarantee the farmer's profits. Large production on the farm may mean small farm returns. Therefore, as a means of distributing the advantages of its work more equitably, the Department helps farmers to raise their income. This too, however, promotes the general welfare and not merely the welfare of the farm group, since country and town are complementary and interdependent, and urban incomes go up and down with farm incomes.

As far as its funds and legal powers permit, the Department protects the food and drug supply from adulteration, contamination, and fraud, and the meat supply from disease. To improve the quality of the entire food supply the Department makes available to farmers the results of research in plant science and animal husbandry. It keeps watch on production at home and abroad and gives the facts to farmers so they may produce the right crops in the right quantities and proportions, and assists the farmers also in cooperative crop adjustments. As an aid to better marketing, it provides commodity grading and inspection service, grades some products for the retail trade, and regulates trading on the great commodity exchanges. These services, many of them the development of decades, depend on coordinated research in the physical, the biological, and the social sciences.

CONSERVATION OF RESOURCES

Central in the Department's duties is assistance in the conservation of resources. On this our agriculture and indeed our whole civilization depend. The task involves the relationship of the man to the land. Our traditional land use system has neither conserved the soil nor maintained a good relationship between the farmer and the land. It has promoted the reckless use of timber, grass, soil, and water, pushed farming onto land not suited to cultivation, caused devastation throughout vast areas, driven a wedge between farm ownership and farm operation, and reduced 42 percent of our farm families to tenancy. It has wrecked the dream of a land of family owned and operated farms.

The Department cooperates with farmers to enable them to live well without overgrazing the pasture land, without overplowing the plow land, and without overcutting the timber land. It aids farmers to combine the use with the conservation of the soil, and to cooperate with State and Federal agencies in reforestation programs, in the land phases of flood control, in the restoration of submarginal land

to trees or grass, and in other projects with permanent production as the goal. Migration trends, rural poverty, improper farming systems, harmful tenure relationships, property rights in land, mortgage debt, and land taxation are among the factors that bear on the conservation problem. The approach is through means that will help the land user protect his land and his family's welfare.

As part of the general program, the Department maps the soil, studies the technical and social factors in soil conservation, and analyses the income and tenure conditions that prevent good care for the soil. To bring about soil conservation it cooperates with farmers and with State and local agencies. Forestry is a part of agriculture, since trees as well as wheat, cotton, corn, and other crops are products of the soil. Hence the Department promotes the growth, management, and conservation of trees on both public and private land. It forecasts frosts, floods, and storms as part of its regular weather service, and furnishes weather data vital in the conservation as well as in the use of agricultural resources.

AIDS TO CITY INDUSTRIES

In many ways, some of them familiar to everyone, the Department aids industrial interests. Its chemical investigations help to prevent dust explosions, spoilage, and waste, and to develop new or wider uses for the main products as well as the byproducts of the farms. Research in the handling, storing, and processing of milk, meats, fruits and vegetables, and dairy products helps to widen the market for these things. Investigations concerning sugar, sirup, vinegar, butter, cheese, and many other products develop better processing. Agricultural chemistry contributes perhaps as much to urban industry as it does to agriculture, particularly through the development of means to utilize agricultural wastes.

Chemical research turns cottonseed, once a nuisance, into an important source of wealth, finds uses for citrus culls and citrus byproducts, and develops commercial methods of obtaining from them such things as lemon oil, orange oil, citrate of lime, and citric acid. It assists processors to convert corn into starches, dextrine, commercial glucose, and maize oil.

In cooperation with industry the Department's chemical research helps to determine the paper-making value of cornstalks, sugarcane bagasse, and other crop wastes. It produces fast and brilliant dyes that widen the uses of cotton, finds methods of getting alcohol from various farm products such as cereals, potatoes, and sweetpotatoes, and develops improved practices and equipment for handling turpentine and rosin. The list of examples could be extended indefinitely. Congress has authorized expanded research of this type and has provided funds for regional laboratories.

TECHNOLOGY AND ECONOMICS LINKED

In its early years the Department's research was mainly concerned with farm technology. It sought to aid farmers in producing higher yields per acre, and more dairy and meat products for each pound of feed. There was no known limit to the demand for cereals, tobacco, meats, and fibers; the big job was to keep up with it. Occasionally,

the supply overtook the demand; but the resulting depressions were seldom long or deep. They did not arise, moreover, from troubles within agriculture, but from crises of urban origin, such as reckless speculation in railroads and real estate. As soon as the skies cleared, farmers wanted more technical aid in production. Apparently all they needed was more power to produce. Eventually it became apparent that power to produce was not the sole need. Complications arose at home and abroad. Production expanded, not only in the United States, but also in newly developed countries such as Canada, Australia, Argentina, and Brazil. Europe, our principal market, looked to other sources, and took our exports less readily. This was no reason to let science take a holiday; there was no justification for permitting pests and diseases to destroy the fruits of the farm family's labor. Technical progress was as necessary as ever. It will always be necessary. Accordingly, the Department maintained and expanded its technological research. Farm people, however, called for economic research and service as well, and for the union in agriculture of the social with the physical and biological sciences.

Specific farm requirements determine the character of the new types of research and service. Farmers want better prices for their better production. They demand that spreads shall be lower between country and city prices; that marketing facilities shall be better; that the Government shall provide commodity grading and inspection; that it shall regulate the great commodity markets; and that it shall furnish accurate and abundant crop and market news. They want the Department to study cost and price conditions, land settlement, land tenure, farm taxation, farm debt, and tenancy. Merely to provide the scientific basis for efficient production is not enough. The Department now is called upon to help the families on the land decide what to grow, how to market their crops, how to conserve and improve land, and how to keep it in their possession. Legislation authorizes research and service along all these lines. Side by side with the work in farm technology, the Department studies marketing, crop adjustment, soil conservation, tenure reform, land utilization, farm credit, farm finance, and farm taxation, and integrates the findings in coordinated services and programs.

PROBLEMS DETERMINE FUNCTIONS

These duties, many of them largely the outgrowth of the post-war depressions, require new cooperative combinations of research and action within the Department, between the Department and various State agencies, and among the farmers and both State and Federal agencies. Change and development in the institution are of course normal. They reflect, with proportionate momentum, the changes that take place constantly in the conditions, both natural and economic, that affect every farm family. Structure and functions of the Department are very different now from what they were 10 or 20 years ago because farm technology, farm markets, and even farm soils are very different, as a result of erosion and other influences, and because the world situation is different. This is a period of enormous change in farm conditions and problems. Necessarily also it is a period of corresponding change in the Federal agency

for service to agriculture. But the basic principle of the institution remains the same. It is simply response, through research and action, to the problems of agriculture whatever they may be.

The Department is an organic whole, not a bundle of unrelated units. All its tasks are interdependent. Jobs that look unlike may be closely complementary. Crop shifts, for instance, are essential to tenancy reform; weather studies are essential to erosion control and flood control. Separation of the different functions is a mental convenience, rather than an actual administrative fact. Administratively the trend is toward integration and functional harmony.

For example, it is impossible to treat research as if it stood by itself. Research is not the specialty of any one branch of the Department; it is the foundation of everything the Department does. Without research there could be no effective pest control, no good administration of regulatory laws, no dependable weather reports, no efficient forestry, no concerted crop adjustment, and no soil conservation.

Research is the substance of extension work; it provides the materials for the extension process and influences the entire operation. Conversely, research draws on extension for farmer cooperation in field experiments, and for the observation and recording of results. Research guides market regulation, rehabilitation of the rural poor, withdrawal from cultivation of land that should not be farmed, flood control through land treatment, the protection of consumers from adulteration and fraud, and the administration of animal and plant quarantines. It runs through the whole gamut of the Department's activities and merges into planning and action.

FIVE MAIN TYPES OF WORK

Nevertheless we may conceive the Department's functions under five heads: (1) Research; (2) planning; (3) education; (4) action; and (5) regulatory. These functions overlap and interpenetrate; each of the Department's bureaus has something to do with them all. They have no counterpart separately in the structure of the organization, or at least no very precise one. No bureau or other unit has sole responsibility for any one of the five. Nevertheless, we can distinguish them from one another in principle. Research is not planning, though it may influence planning. Planning is not research; yet it must use and may inspire research. Education differs both from research and from planning; it is the communication of knowledge and programs to interested persons. Getting knowledge and diffusing it, though interdependent functions, require somewhat different instrumentalities. Action, on farm, forest, range, and watershed, is the fruition of them all; it involves the practical collaboration of the Department with farmers and other land users and with local and State agencies. Regulatory law administration ramifies widely in the Department's activities.

RESEARCH

Everyone recognizes that the Federal Government should promote agricultural science. In the organic act that created the Department in 1862 Congress directed the institution "to acquire and diffuse useful information on subjects connected with agriculture in the most general and comprehensive sense." Naturally the Department does not rely only on the findings of its own investigators, but draws upon the general fund of scientific knowledge as it grows throughout the world. There is an exchange of findings to the general benefit of mankind.

Agricultural research seldom attracts private enterprise. Individuals and corporations have not the public responsibility, the scientific interest, or the money to do it well. The expense and uncertainty involved are considerable. Moreover the benefits cannot be monopolized, but must be shared with the community. Publicly conducted, however, agricultural research pays large returns; it is one of the greatest sources of private and national wealth. Its findings enable farmers and other citizens to solve economic and social, as well as technical problems, and to improve rural life as well as rural production. Agricultural research in the United States depends largely on public funds. Since the middle of the nineteenth century the people have chosen to make their chief contribution to it through the Federal Government, though their contribution through State governments has been also very substantial. There is close cooperation between the Federal and the State research.

The field is vast. Besides biology, chemistry, and physics it includes the social sciences, particularly economics and rural sociology. Economic research helps the farmer to adjust his acreage and livestock breeding suitably, to join with other farmers in crop adjustments, and to counteract malicious or ignorant speculation in farm commodities. Facts about crops and markets, along with analyses of business conditions, are indispensable to the operation of a modern farm. Agriculture has intricate marketing problems that require research. In 1863, when the Department enlarged its economics research considerably, the Agricultural Commissioner expressed the hope that the resulting information would "unlock the hidden treasure of maturing nature * * * and reveal to the husbandman and the merchant the great laws of demand and supply." Experience has shown since that economic research alone is not enough; yet it is indispensable, and the Department does more of it today than ever before.

MAIN LINES OF SCIENTIFIC WORK

In plant science the Department studies ways that farmers may use to lower production costs and improve the quality of their products. This research increases the resistance of economic plants to unfavorable environments and to diseases and insect pests. It investigates parasite and host relationships and explores the effects of soil and climate on plant growth. It studies the bacteria that cause plant diseases. It finds methods of controlling or preventing cereal or

cotton diseases and of controlling some common diseases of fruits and vegetables. Plant pathology embraces the virus diseases, and also the diseases that cannot be traced to any organism, but that result from malnutrition, or from unfavorable conditions of soil and climate. It was one of the Department's investigators who first proved that insects may spread plant diseases, and the discovery had immensely important practical results.

As a result of research, the Department breeds better plants and animals experimentally, and explores genetics or the laws of inheritance. Probably no single factor in the Federal-State research program is more important than the search for superior germ plasm. In the field of animal industry agricultural scientists investigate the causes, prevention, and treatment of livestock diseases and conduct experiments in feeding and breeding. In chemical research they study and map the soils; investigate the technology, manufacture, utilization, and preservation of agricultural products and byproducts; inquire into the physiological effects of foods, drugs, and cosmetics on the human organism; develop the utilization of agricultural raw materials for medicinal, coloring, and technical purposes; and conduct extensive fertilizer studies. Research in home economics, both State and Federal, promotes the more efficient consumption of agricultural products. This work deals with textiles and other products of agriculture as well as food, and the findings point toward a richer, more satisfying life.

Investigations in dairying deal with breeding, feeding, and managing dairy cattle; with the efficient and sanitary production of milk and milk products; and with the bacteriology and chemistry of milk. Entomology deals with insects and their economic relations; with insect eradication or control; with the composition, action, and application of insecticides; and with the influence of insects on the health of man and animals. Research in forestry includes economics and forest taxation, forest-product utilization, and the whole subject of forest culture and preservation. Weather science as developed in the Department aids agriculture, industry, and navigation by air and water.

Needless to say, this is only a partial list of agricultural research activities. The investigations complement one another. When the scientist studies the soil he draws on chemistry, biology, mineralogy, and even meteorology. Similarly, economics draws on agronomy, chemistry, and biology. It was possible 100 or even 50 years ago to organize agricultural research projects separately along the lines of the basic sciences. Today chemistry, botany, and entomology, and the other agricultural sciences would perish in watertight compartments. They have to be integrated one with another and with studies in many fields remote from agriculture.

FUNDAMENTAL INVESTIGATIONS

Much of the research in the Department and in the agricultural experiment stations and land-grant colleges developed originally to meet emergencies. Frequently it sought to throw up quick defenses against animal and plant pests and diseases, to develop varieties and strains of plants and livestock suited to particular conditions, and to solve specific economic questions. Research of this type, with the objects fairly well defined in advance, is extremely useful and will always be indispen-

sable. But the public welfare demands also another type of research; it needs foundation studies to establish laws and principles. Science is exploration and should not be confined to territory that can be mapped in advance. It should penetrate the unknown. Fundamental research often develops facts and principles of revolutionary practical importance and solves problems that short-cut methods cannot solve.

Various Federal laws provide for fundamental research in the Department, the agricultural experiment stations, and the land-grant colleges. One of the most recent of these laws is the Bankhead-Jones Act of 1935 which authorizes and directs the Secretary of Agriculture to conduct scientific, technical, economic, and other research into laws and principles that underlie basic problems of agriculture in its broadest aspects. It also calls for research to improve the quality of agricultural products, to develop new and improved methods for their production and distribution, to discover uses for farm products and byproducts and manufactures thereof, and to study the conservation, development, and use of land and water resources for agricultural purposes. Subsequently, in the Agricultural Adjustment Act of 1938, Congress established regional laboratories for fundamental research in the utilization of farm products and byproducts.

SYNTHESIS OF RESULTS

Research begins with the analysis of problems—with their division into small parts for separate, specialized study. After the analysis, however, there must be synthesis. The parts must be reorganized and reassembled. Synthesis of findings is just as truly research, and just as important, as the preceding subdivision of problems for specialized investigation. Farmers cannot use fragmentary results. They need organized findings, with facts about soils, crops, insects, diseases, and so forth, brought together in practical combinations. This is especially true when the application must be collective, regional, and national. It takes the whole of agricultural science, in all its diversity, to cover the whole of agriculture, and also much science that transcends agriculture.

PLANNING

Formerly, when agricultural problems were mainly technical, the individual farmer could blend chemistry, biology, and economics for practical use, with only such help as he could get from the extension services. He made his own balanced diet of scientific information. Agricultural planning then was simply planning for individual action. There was no special need for farmers to act in concert. Those who applied the teaching of science profited; those who did not took the consequences. Farmers cannot deal individually with national and regional crop adjustment, with soil conservation throughout whole land use regions, with orderly marketing through marketing agreements, with tenancy and rural rehabilitation, or with flood control through land treatments. In matters of this kind the individual farmer can do little; he must cooperate with his fellows and with public agencies. In turn public agencies—local, State, and Federal—must cooperate with him. All this takes planning. The planning begins on the farm and advances through coordination of facts and recommendations to specific provisions of programs for cooperative application on farms, ranches, and watersheds.

PROGRAMS THAT REQUIRE COORDINATION

Recent Federal legislation requires many different agricultural programs. They must all be planned and coordinated. The major ones are: Adjustment and conservation programs under the Soil Conservation and Domestic Allotment Act of 1936, the Sugar Act of 1937, and the Agricultural Adjustment Act of 1938; crop insurance under the Federal Crop Insurance Act of 1938; the marketing agreements program and surplus diversion under acts passed in 1937 and 1938; tenancy and rehabilitation programs and the purchase and development of submarginal lands under the Bankhead-Jones Farm Tenant Act; flood-control programs under the Flood Control Acts of 1936, 1937, and 1938; farm forestry under the Norris-Doxey Act of 1937; water facilities programs under the Pope-Jones Act of 1937; an enlarged program of fundamental research under the Bankhead-Jones Act of 1935 and the Agricultural Adjustment Act of 1938; and increased forest conservation. Coordination of the programs is necessary to prevent confusion, conflict, and waste of time and money and make it possible for citizens acting cooperatively to achieve a permanent satisfactory agriculture.

Wind erosion in the so-called Dust Bowl during the recent drought years was a striking example of the need for planned coordinated action. The Dust Bowl problem did not admit of any simple or rapid solution. Much of the land was too eroded for restoration exclusively through private enterprise. Thousands of settlers had pulled up stakes and abandoned their farms. Foreclosures had been heavy; tax delinquency was rife; and debt had sunk many families from ownership to tenancy. There was little to be gained simply by demonstrating proper farm practices, which the impoverished

people could not follow. Nor could the trouble be cured simply through benefit payments or rehabilitation loans. Such aids were necessary; but many other things were necessary too.

Among them were changes in the type of farming; consolidation of farms; diversion of some land to nonfarm uses; tenant-purchase aids; action to check erosion; and a general shift of the most highly erodible farm land into vegetative-covered land. Rehabilitation loans needed to be followed with guidance in land use methods, and with land use improvement through State and local agencies. Many steps were necessary. Planning was imperative—planning for social and economic, as well as technical objectives, and for action through public as well as private instrumentalities. Planning of the same character is likewise necessary for promotion of the public welfare in many other problem areas, and in our agricultural land use system as a whole.

KEYSTONES IN COORDINATED PLANNING

Broadly, coordinated agricultural planning must integrate (1) national and regional crop adjustment; (2) marketing; (3) family rehabilitation, with better family living as the goal; (4) proper care for the soil on farm and nonfarm land; (5) tenure reform and land taxation; (6) public land buying; and (7) public aids to the action of citizens in allocating different resources among the most suitable uses. It begins deep down in fact finding and research, and rises through coordinated program building to coordinated action.

Such planning begins on watershed, forest, farm, and ranch. It deals with such typical questions as: Is the local or regional cropping system in balance with the national crop objectives? Are the land units so small or poor that they can never furnish a livelihood? Or, on the other hand, are they too large for efficient operation of the right type? Are private or public agencies promoting the relocation of farmers in submarginal areas? Is credit policy integrated properly with land buying and crop adjustment? How far can erosion control be promoted through physical procedures independently of action to sustain farm incomes or improve farm-tenure conditions? What about the correct priorities—the order in which the different things should be done?

Coordinated planning aims to develop information and programs that farmers can use in efforts to keep crop adjustment, soil conservation, flood control, and other land use activities in balance, and to advance these ends by means that will also increase farm incomes.

It must take urban conditions into account, since the cure for many agricultural land use problems begins in the cities. Only the creation of more city jobs can prevent the continual creation of new farms in regions of poor soil. Hence, in their agricultural planning farm people must look beyond agriculture. They must consider all land uses; those that employ the city workers directly and indirectly as well as those that employ the people on the farms. Such farm planning cannot be bounded by the farms, ranches, and forests, or even by the rural population, but should consider also the relationship between town and country.

PLANNING FACILITIES PROVIDED

In providing for the promotion of these ends Congress did not simply authorize grants-in-aid to the States, as it had done under the Hatch, the Adams, the Smith-Lever, and other acts for the support of State research and extension work. It appropriated funds directly to the Secretary of Agriculture, and authorized him to make certain payments directly to farmers and to carry out certain physical operations on the lands of cooperating land occupiers. Entrusted with these large additional responsibilities, the Department quickly felt the need for special planning and coordinating facilities.

Machinery was necessary, in particular, to coordinate the programs, to integrate the Department's activities with those of the States, and also to coordinate both Federal and State work with planning and action by farm people. The Department named a committee to act with a similar committee of the Association of Land-Grant Colleges and Universities. The Department's committee concluded that the best way to promote cooperation of State and Federal Governments in providing public assistance to agriculture, and at the same time to coordinate the action programs one with another and with the thought and action of the farmers, would be to set up an adequate planning organization. It conferred on the proposal with the Land-grant college committee. The next step was a joint conference, held on July 7, and 8, 1938, at Mount Weather, Va. The conference arrived at a formal agreement, which sketched out a basis of co-operation between the Department and the land-grant colleges and universities for working with farm people, community by community, county by county, and State by State, in developing land use plans. The agreement was a direct outgrowth of the need for coordinated planning through the regular and frequent collaboration of farmers, specialists, and administrators.

Farmer participation is the backbone of the whole undertaking. All concerned want the kind of planning that draws together the greatest number of competent farmers, scientists, and administrators, and this was the main object of the Mount Weather agreement. Even if the soils men, the economists, and the other experts could develop a good program unaided, the approval and action of the farmers would be necessary to carry it out. Farmers have essential information, particularly with regard to their own localities, that the experts lack. Conversely, the experts know useful things that farmers do not know. When farmers and experts differ, they can get together best through an exchange of information. Expert and farmer each need the other's knowledge. Farmers can participate in formulating and executing all the programs. They must make decisions on the basis of their own experiences and the information supplied to them by specialists.

FEDERAL-STATE BASIS OF AGREEMENT

Briefly, the agreement declared that existing Federal-State relationships in research and extension were satisfactory, but emphasized the special requirements of the newer programs. There was need, it explained, for planning and action by farm people as a help to

the Secretary of Agriculture in the administration of the programs. The agreement stated that—

"the Department feels the need for reasonably uniform procedures whereby farmers may take responsibility for the development of sound land use plans, programs, and policies for the dual purpose (*a*) of correlating current action programs to achieve stability of farm income and farm resources, and (*b*) of helping determine and guide the longer time efforts toward these ends.

Specifically, the agreement suggested four things:

(1) That each State extension service should set up in each community and county, agricultural land use planning committees.

(2) That the county committee should include official personnel both Federal and State, as well as at least 10 farm people, and a few forest landowners in counties where forestry is a problem.

(3) That the county committee should correlate, on a county basis, the land use plans, programs, and policies developed by community and neighborhood planning committees.

(4) That in each State there should be established an agricultural land use program or policy committee, with the Director of Extension as chairman and with certain Federal and State officials and a number of farm people as members.

Subsequently, the Department and the Extension Service signed a memorandum of agreement as to planning objectives, which outlined a program in which will be correlated the suggestions and work of farmers, of the State agricultural extension services and experiment stations, and of the United States Department of Agriculture. Among the procedures to be used in carrying out the agreed objectives will be at the Federal level agricultural adjustment, conservation, crop insurance, farm forestry, flood control, land retirement, rural rehabilitation, and water utilization; and at the State level research and extension programs, and use of State authority in taxation, zoning, and other matters in which the States have jurisdiction. At the local level the tax-equalization machinery, the organization of school districts, and the provision of farm-to-market roads will be important to the effectuation of the plans.

COMMITTEES AND ADVISORY COUNCILS FORMED

In accordance with the Mount Weather agreement, community agricultural-planning groups, county agricultural land use planning committees, and State agricultural advisory councils have come into existence in nearly all the States. Farmer participation is the foundation stone. Community, county, and State committees are assembling and correlating physical, economic, and social data, and working out necessary land use adjustments and changes in farming systems, practices, and institutions. Besides developing definite programs for the immediate future, they are considering long-time goals and are helping to correlate local with State and Federal programs.

The results of community planning will be integrated on a county basis by the county committee; the results of the county planning will then be integrated on a State basis by the State agricultural advisory council; and finally, the State findings and recommendations will be correlated on a national basis, through a regular interchange of views with representatives of the Federal agencies, in an operating pattern which will reflect the unity of diverse farm problems. In this way the interconnection of different problems farm by farm

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throughout the country, such as erosion, tenancy, prices, farm income, flood control, submarginal lands, and crop adjustment will have its effective counterpart eventually in a unified program.

Basic in the whole undertaking are land use mapping and land classification. Here the community committees play an essential part; they shoulder much of the responsibility for local mapping and land description. Each community map may show several relatively homogeneous local areas. These areas will be similar in physical features, but not always in prevailing land uses and types or systems of farming. Along with the map will be descriptions of nontangible elements in the local situation such as the tenure conditions, the typical organization of the individual farm business, and the adaptation or lack of adaptation of the farming system to the area. This procedure gives the background information and the geographic setting for more detailed land classification as a later step. It distinguishes land that should be farmed from land that should not, indicates desirable land use practices, and furnishes important guidance to the action agencies.

TYPICAL PROBLEMS

Local, State, and Federal planning naturally go together. Erosion control, for example, often requires soil conservation associations, and these must be organized under State laws. Federal work relies greatly on State and local organizations in promoting better range management. Land use improvement in some areas must begin with zoning, with tax reform, or with improvement of the leasing system. Mainly, these are State and local responsibilities. Frequently, the situation calls for a threefold approach: locally through zoning, road systems, organization of school districts, credit policy, or tax reform; on a State basis through State authorizations for flood control and erosion control; and federally through the union of Federal with State and local action. In short, the planning must be geographical as well as functional. It cannot be done on a single formula for the entire country.

CROP ADJUSTMENT IN TOTAL APPROACH

Crop adjustment for example involves national, regional, and local planning, with family rehabilitation, better farming, and better land use included. The broad objective is to suit the production of different crops to the total available market. The original method, in a period when farm surpluses were extremely large, was a flat percentage reduction of acreage on all the participating farms. Methods now in use aim at multiple objectives. Certain farms in the cotton and wheat areas are so poor and relatively so small that the operators cannot reduce their acreage of cash crops and continue to earn a living. Their nonparticipation affects the crop adjustment as a whole and perpetuates soil destruction. Ways must be found to give them an interest in the general crop adjustment, so that they can harmonize their practices with the needs of agriculture as a whole. Broadly, for such farmers the crop-adjustment program must be tied in with rural rehabilitation through grants, loans, and farm guidance.

MULTIPLE COMBINED OBJECTIVES

Coordinated planning of this type attacks the farm problem as a whole, as well as in its several parts. There are no separate or isolated problems of crop adjustment, of soil conservation, of land tenure, of cropping, of forestry, of wildlife conservation, or of flood control. Farm by farm, across the continent, there is one unified land use problem of which crop adjustment, forestry, grazing, etc., are merely aspects. Problems of farm prices, of soil defense and soil building, and of land retirement from agriculture go together, and efforts to solve them must likewise go together. Action toward one objective must be action also toward the others; otherwise it will fail.

There must be proportion and balance in the program pattern. Proper timing is important. Things must be done in the right order. Minor ends must give priority to the more important ones. The total planning involves research but goes on further to sift, interpret, combine, and apply findings of different kinds to different situations. It considers social attitudes along with scientific facts and endeavors to fit everything into a framework that will coordinate the land use planning of millions of individuals with the assistance made available to them by many public agencies, local, State, and Federal.

Following are some objectives of this planning:

1. To acquire and diffuse useful information on subjects connected with agriculture in the most general and comprehensive sense.
2. To assist farmers, through research, experiment, and education, to increase the efficiency and reduce the unit costs of their production.
3. To assist farmers in improving the quality and increasing the variety of their production.
4. To achieve a balanced agriculture and at the same time improve the general balance between industry and agriculture so that both farm and nonfarm production can be increased in a harmonious ratio.
5. To promote security for both farmer and consumer through the maintenance of an ever-normal granary by means of efficient production, adjusted production, conservation of the soil, balanced marketing, and crop insurance; in other words, to help stabilize farm supplies and prices.
6. To help maintain and increase the ownership of family-sized farms by the operating occupants, and in other ways to improve the land-tenure system.
7. To promote the conservation of soil, water, and desirable vegetation.
8. To regain our agricultural export trade so far as it is practicable for us as a creditor nation to do so—ultimately through reciprocal trade agreements and international commodity conferences; meantime by methods of a more temporary nature.
9. To work for the protection of the food and drug supply from adulteration, contamination, and fraud, and the meat supply from disease.
10. To promote the intelligent consumption of agricultural products.
11. To eliminate or prevent social hazards and to correct economic abuses through the administration of various regulatory statutes.

EDUCATIONAL ACTIVITY

Education work in the Department fulfills a major purpose of the organic act; it diffuses "useful information on subjects connected with agriculture in the most general and comprehensive sense." Education spreads knowledge that the individual can apply himself, and also knowledge that can fructify best through the cooperation of citizens with public agencies. Both kinds interest a vast and growing public. The educational services help to bring science and practice together in fields, forests, and factories, through individual action and also through the informed cooperation of farmers and other citizens with local, State, and Federal agencies.

Among the facilities are the extension service, publications, press and radio services, and motion pictures and exhibits. These facilities do not constitute a publicity agency or a public relations service in the usual sense of that term. The object is to disseminate the largest quantity of balanced, organized, accurate, and useful knowledge; not to win prestige for the Department, or to "sell" the institution to the public, or to advertise the scientists. Mere scraps of information will not do. Farmers and others want the fundamentals of science in combinations suited to their purposes.

Moreover, the educational system is for the specialist as well as the layman. It communicates scientific findings to research workers, as well as to people with immediate practical ends in view. This is a necessity. Modern agricultural science, with its multiple combined objectives, requires specialism combined with general knowledge, and the combination depends vitally on the quick publication of results. It is necessary, in short, for the investigators to educate one another. Then they get the full stimulus that progress in one line should have on other inquiries. Also, they avoid unnecessary duplication of work. Equally important, they see the relationship of their own part of the work to the whole.

Results of Federal and State research in agriculture are correlated and brought to farm people through the Extension Service, which developed under the Agricultural Extension Act of 1914, otherwise known as the Smith-Lever Act. Agricultural education in the United States really started earlier. It was under way in the endowed colleges and State colleges in the nineteenth century. The Land Grant Act of 1862, which gave lands to the States for the support of colleges of agriculture and the mechanic arts, strengthened it greatly, and additional impetus came in 1887 from the Agricultural Experiment Stations Act. In fact, the gathering and experimental application of agricultural information ran far ahead of the dissemination of it. It was declared in Congress, when the Smith-Lever Act was in the making, that the Department and the State colleges and experiment stations had agricultural knowledge 25 years in advance of the average farm practice. Extension work later narrowed the gap considerably, and won such esteem that through the years Congress steadily increased the Federal contribution.

It is the purpose of the Extension Service to make available the results of research in agriculture and home economics to all who can

use the information. The Service operates in two principal fields: (1) It mobilizes Federal, State, and county facilities for helping farm people to solve their ordinary problems of production and marketing, homemaking, and country-life improvement; and (2) it helps farmers to tackle collectively the problems that result from great national emergencies. In recent years, for example, besides carrying useful technical information to the farmers, it has helped them in the administration of production-adjustment programs, in obtaining loans on stored crops, in drought-relief measures, in programs for the prevention of soil erosion, in programs for debt adjustment and farm-credit improvement, and in rural rehabilitation and relief. In all these lines the Extension Service task is both educational and practical. It combines information with service.

Necessarily, the Federal Government and the States cooperate. All the Federal acts that support the extension services provide for a close relationship between the Department and State extension agencies. Federal workers join with State workers in applying general scientific and economic information to State and local conditions. This gives a better result than either the Department or the State extension forces could achieve independently. Representing the Department in the cooperative set-up is the Extension Service. In each of the States the organization consists of an extension director and an administrative and supervisory staff, with headquarters in most cases at the State agricultural colleges. Nearly every county in the United States has a county agricultural agent, and nearly a third of the counties have home demonstration agents.

Agricultural extension originally dealt chiefly with the technique of farm production, but now it touches every phase of farming and farm living. Problems of production are as important now as they were formerly. Farmers must always study how to grow more per acre and how to get more meat and milk from their livestock for each pound of feed consumed. Even when surpluses exist, farmers have to keep down their costs of production. They cannot let pests and diseases take the crops, in the hope of causing prices to rise; their expenses would rise out of all proportion to any resulting benefit. Farmers and consumers have a common interest here. Along with the technique of production, however, farmers must deal with problems of crop adjustment, marketing, soil conservation, farm management, farm finance, and family living. In all these fields the cooperative extension services provide them with usable knowledge. Field and home demonstrations aid farmers to learn by doing.

Home demonstration work originated with the giving of instruction to a group of girls in growing and utilizing tomatoes. Women soon took up the work, and it grew rapidly until it covered a wide field of farm-home activity among women in many parts of the country. The demand for food production and preservation during the World War gave impetus to the work. Selection and preparation of foods; making the farm home attractive, comfortable, and efficient; home management, child care and training; preparation and standardization of home products for sale; and other subjects are now included in the program. Material expansion of the work has been made possible by the assistance of large numbers of volunteer local leaders, who give home economics instruction to the women and girls

of their communities with the aid and advice of the home demonstration agent. Farm women who participate in home demonstration activities give attention also to matters of civic and social improvement.

REFLECTS ALL PHASES OF RESEARCH AND ACTION

Agricultural education through these means and also through press releases, radio broadcasts, motion pictures, exhibits, and official publications provides a "balanced diet" of science and economics. Beginning with the technique of production, it extends to crop adjustment, to marketing, to the organization of the farm business, to the conservation of the soil, and to the better use of available resources for family living. By reflecting the sense of technical and social interrelationships that permeate research and planning, the educational activities emphasize the whole farm approach. Specialists in farm management, agronomy, agricultural engineering, and economics develop coordinated plans and bring them to the notice of farmers through field demonstrations which enlist the cooperation of entire farm families as well as of county agents, home-demonstration agents, and farm- and home-management specialists. Additional work in home economics helps homemakers to solve problems in diet, clothing, home furnishing, and family spending. Such work deals also with child care and training, with recreation, and with family and community relationships.

Some of the questions that farmers ask more and more are the very general ones: What is the whole farm program about? and What is it getting us into? As farmer committeemen begin to master the technical phases of their job, they ask such questions more insistently. In an effort to answer them the Department has set up a section to acquaint field workers of the Extension Service and farmer committeemen with the social implications of local, State, and Federal governmental aid to agriculture. Farmer discussion groups debate rural problems with such help as the State colleges and the Department of Agriculture can give them through pamphlets and discussion-leader training.

NUMEROUS CHANNELS UTILIZED

Outstanding in value are the crop and market news reports. Farmers need market information vitally. Without it they work at a great disadvantage in dealing with middlemen and speculators. Outlook information helps farmers to adjust their acreage and livestock breeding, and at the same time lessens the influence of harmful speculation on prices. When everyone can learn the facts, rumor does less harm. Hence, the Department collects, analyzes, and interprets crop and market facts, and periodically reviews supply and demand conditions. This work covers all the important farm products, and provides reports on shipments, stocks, imports and exports, prices, and consumer demand.

Official publishing, an outgrowth of 75 years' experience, is a mainstay of the educational work. It includes technical bulletins for scientific workers and others interested in precise and exhaustive records of the Department's research; semipopular circulars and miscel-

laneous publications; popular publications such as Farmers' Bulletins and Leaflets; and a number of popular and semipopular periodicals. Each year the Department issues approximately 25,000,000 copies of bulletins, circulars, periodicals, publication lists, and other publications.

It makes news and feature articles available to the press and to magazines, cooperates extensively with network broadcasting companies in radio programs, and provides exhibits for fairs and expositions. Scientific discoveries, farm-management recommendations, advice about plant pests and diseases, and news of the action programs come to the attention of the public through the press and by radio. Keystones in the information service are cooperative extension work, bulletins, motion pictures and exhibits, press and radio services, weather forecasting, crop and market reports, outlook reports, periodicals, soil surveys, and correspondence with individuals.

ACTION

Research, planning, and education come together in action, but the action does not result automatically. It requires administrative organization and procedure. Familiar examples are the battles against the diseases of livestock and against insect pests, the maintenance of Federal meat inspection, and commodity grading and standardization with the related shipping and receiving point inspection services. The programs for crop adjustment, soil conservation, crop insurance, submarginal-land retirement, and land treatment for flood control have complex administrative requirements. They bring the Department into operating agreements of various kinds with farmers and others. They require it to disburse funds for commodity loans and crop insurance, to purchase land extensively, and to buy and sell or store commodities or furnish them to persons on relief. In all these activities the basis is legal authority, while the mechanism is a division of labor among the various bureaus and offices, and a working partnership with farmer groups and with State and local agencies.

Broadly, the action programs aim to promote security for farmer and consumer through (1) efficient, properly adjusted production, balanced marketing, loans and storage, and crop insurance; (2) conservation of resources; and (3) improvement of the land use system. They look toward increase of the farm income, conservation of soil, water, and desirable vegetation, improvement of land-tenure relationships, maintenance and increase in farm ownership by farm families, and better adjustment between agriculture and urban industry.

Soil conservation and crop adjustment are objectives under the Agricultural Adjustment Act of 1938, which provides also for crop insurance, marketing agreements, commodity loans, and an ever-normal granary. Related functions include surplus diversion and relief distribution. Conservation of soil, water, and desirable vegetation goes ahead also through special erosion-control operations and through land treatment for flood control. Other legislation provides for the public acquisition and development in nonfarm uses of land that for agriculture is submarginal. There are programs for the purchase of land for public forests, programs for farm forestry, programs for small water developments in the semiarid areas of the Western States, and programs for the development of new or better uses for agricultural products and byproducts. These activities link up with local, State, and Federal efforts to improve the condition of the rural poor. Among the procedures are farm and home guidance, rehabilitation loans, debt readjustment, leasing-system improvements, and tenant-purchase operations. Buttressing the program pattern are Federal price-supporting measures, the purpose of which is to raise domestic agricultural prices above world prices when world prices are very low.

After being broadly conceived and planned, the programs of operation become the executive responsibility of different administration units. What these units do in detail is to a considerable extent their own problem. Each program, however, must fall into place as part of a general program. Therefore the several administrative units

must be in regular consultation one with another, and must fit not only their main objectives into the larger pattern, but also their localized activities. The different programs come into contact at many points in the field. For example, the A. A. A. program of crop adjustments and benefit payments has a bearing on land retirement and rural rehabilitation. It would be wrong to extend the general benefit-payment system, without local modification, into areas that ought to be retired from cultivation altogether. Therefore the Department maintains a network of liaison relationships among the action agencies, as well as a system of cooperative functioning with State and local agencies and farmer committees.

CARRYING THE PROGRAMS TO THE FIELD

In carrying the programs to the farms, ranches, forests, and watersheds, the operating agencies have to balance them one with another and with the physical, economic, legal, and institutional conditions of the whole farm economy.

As an aid to interagency cooperation, each of the operating agencies assigns a representative to each of the other operating agencies. The liaison relationships involve research men in administration and administrators in research, since investigators inevitably have some responsibility for getting their findings into practice while administrators must know the pertinent recommendations of the scientific staff.

Useful guidance comes to the operating agencies direct from the farmers, as well as from the research and planning units of the Department and the affiliated State agencies. Representatives of the operating agencies consult regularly with farmer committees. There is constant vitalization of the operating programs through direct and frequent consultation among farmers, State officials, and Federal officials. Farmers, technical experts, and administrators go into action together.

Each program deals with one segment of a general problem. The important common feature of the programs is their interrelationship. In research, and in some of the older service functions, the Department's bureaus have functions that do not overlap. This is not true of the operating programs. The type of organization that proved well enough adapted to the older work does not wholly suit the new. Accordingly, the Department has provided administratively for the constant coordination of field work in principles and details. Eventually this will make all the programs essentially one program on reaching the farm, and will fully coordinate Federal with State and local action.

A TYPICAL COMBINED APPROACH

Procedure in Greene County, Ga., is an example of the combined approach through many agencies. This piedmont county, once a scene of agricultural progress and prosperity, presents today a tangle of human and physical problems. From 1920 to 1930 it lost a little more than one-third of its population. It has overdependence on cotton, terrifying soil erosion, boll weevil infestation, low farm incomes, poor housing, stranded people, very few good schools, and a serious want of other community facilities.

The readjustment problem is many-sided. It calls for conservation and upbuilding of the soil, clearance of choked stream channels, reallocation of the land among the proper farm, forest, and pasture uses, reorganization of the cropping system, rehabilitation loans for the very poor, the raising of tenants to farm ownership, participation in the A. A. A. crop adjustments, better education of the people in farm and home organization and management, withdrawal of the worst land from cultivation, and good forest management on both private and public land.

In tackling these interrelated wants local advisory committees study available human and material resources and draw up tentative programs. They call on the county, State, and Federal Governments for assistance, and devise means for coordinating individual, local, State, and Federal action.

In developing the soil erosion-control program, for example, local farmers organized the Piedmont Soil Conservation District. In preparing the work, the supervisors of this body had the assistance of farmer committees, of the State soil conservation committee, and of subcommittee representatives of the Georgia Experiment Station, the State Agricultural Extension Service, the Farm Security Administration, the Soil Conservation Service, the Bureau of Agricultural Economics, The Georgia State Department of Vocational Education, and the Georgia State Department of Natural Resources.

Farmers in Greene County have likewise called on different public agencies for cooperative help in stream clearance. The Greene County land use planning committee has drawn up formal recommendations.[1] Many of the county's streams, which formerly were clear, are now muddy and filled with soil and brush and even parts of trees washed from eroding hills. These obstacles interfere with drainage, cause floods on nearby lowlands, and make breeding places for malaria mosquitoes. Cooperative stream clearance, as recommended by the committee, would unite land operators and various public agencies. Land operators would furnish some labor. The Soil Conservation Service would plan the program with the assistance of the Farm Security Administration. Some labor and machinery would be available from C. C. C. camps. The W. P. A. would make the undertaking one of its projects for the county. Also, the county commissioners would shoulder some of the responsibility. These recommendations if approved would mobilize technical assistance, labor, equipment, and funds on the necessary scale. Individuals, of course, have small incentive to clear just the parts of streams that run through their own land. Some kind of cooperative project is indispensable.

SCOPE OF THE COUNTY PROGRAM

Similar cooperation among different agencies is the basis of all the action programs. As a result, coordinated action is under way throughout the county toward the following objectives: (1) Control and prevention of soil erosion; (2) withdrawal of the poorest farms from cultivation; (3) rehabilitation of farm families through farm and home guidance, changed cropping, farm reorganization, improved leasing arrangements, more balanced diets, medical aid, and improved

housing facilities, and loans and subsistence grants to some families; and (4) increased participation in the A. A. A. programs with special emphasis on crop diversification and on the reduction of soil depletion.

Typifying the integration of diverse procedures is the work of the Farm Security Administration. This agency helps borrowers to consolidate and scale down their outstanding debts, encourages landlords and tenants to sign 5-year written leases in substitution of the customary 1-year oral leases, arranges with the soil conservation district for technical aid and equipment necessary in cooperative soil conservation work, and cooperates with other Federal agencies and with local authorities in school improvement and in the provision of medical aid. It provides community-service loans for the purchase of terracing equipment and gives technical and financial aid in establishing community canneries.

Another important type of interagency cooperation concerns the withdrawal from agriculture of land that should not be farmed. In the withdrawal operations the Soil Conservation Service is the administrative agency. It operates under title III of the Bankhead-Jones Act. After buying submarginal land, the Soil Conservation Service develops it for grazing and forestry. Also, the coordinated programs aim to develop checks against the mere shifting, as distinguished from the permanent eradication of submarginal farm operations. Working with local people, the various agencies use several methods. For example, the soil conservation district has authority under State law to restrict improper land uses. The Farm Security Administration may attach conditions to its rehabilitation loans. It can withhold them in definitely submarginal areas and elsewhere it can make stipulations as to land use. The A. A. A. can help farmers to improve the cropping system through conservation payments. These are only a few of the available means for perpetuating land use improvements.

FOREST AND FARM IMPROVEMENT COMBINED

Several agencies cooperate in reforestation work, with the Forest Service providing technical advice. The Forest Service cooperates with the Soil Conservation Service, for example, in reforesting land purchased under title III of the Bankhead-Jones Act. In these areas community-forest and pasture projects serve the double object of restoring the land to timber or grass and providing supplementary income for farm people. Generally the Soil Conservation Service leases or licenses the acquired areas for forestry or grazing. It deals in this way with groups of farmers and also with individuals. The lease arrangements require good forestry and pasture practices. Soil experts, foresters, specialists in grasses, forest graziers, and the administrative people put their combined resources at the disposal of the land users.

In the whole program the object is to help farmers improve their economic condition immediately and permanently. Usually it offers a choice of courses for the individual farm families. Basically, it requires the development of new sources of farm income, as an offset to the former dependence on soil-depleting crops. There are three main opportunities: (1) Crop diversification with increased pro-

duction for home consumption; (2) the diversion of some land to pasture and forest; and (3) the conservation of resources through erosion control, soil building, and good land use methods. Advance along any of these lines requires movement simultaneously along other fronts in a very complex, cooperative undertaking with farm cooperation as the basis, and dovetailing of local, State, and Federal procedures.

REGULATORY LAW ADMINISTRATION

Regulatory law administration in the Department, like research and the economic services, developed from necessity. It began in 1884 with the creation of the Bureau of Animal Industry for battles against the diseases of livestock. The Department now administers some 50 regulatory statutes. Among the more important are the animal-quarantine laws, the Meat Inspection Act, the Virus Serum Toxin Act, the Packers and Stockyards Act, the 28-hour law, the Renovated Butter Act, the Plant Quarantine Act, the Federal Food, Drug, and Cosmetic Act, the Caustic Poison Act, the Insecticide and Fungicide Act, the Seed Importation Act, the Cotton Standards Act, the Grain Standards Act, the Federal Warehouse Act, the Cotton Futures Act, and the Commodity Exchange Act. Some of the regulatory laws, for example the Packers and Stockyards Act, impose quasi-judicial duties on the Secretary of Agriculture.

Foreign plant pests illustrate the necessity for regulatory laws. This country had practically no exclusion measures until 1912, and dangerous new pests frequently crossed the borders. Five new major pests entered between 1908 and 1912—the oriental fruit moth, the citrus canker, the potato wart, the camphor scale, and the European corn borer. Other dangerous pests had entered previously, among them the hessian fly, the cotton boll weevil, the alfalfa weevil, the brown-tail and gypsy moths, the chestnut blight, the white pine blister rust, and the wheat smut. More than 50 percent of our plant pests and diseases are of foreign origin. In 1912 Congress passed the Plant Quarantine Act. Since then only three pests of serious importance (the Mediterranean fruitfly, the Dutch elm disease, and the white-fringed beetle) are known to have reached this country from other continents, and the Mediterranean fruitfly has been eradicated.

Underlying the regulatory statutes are ethical, sanitary, conservation, and economic considerations. Broadly, the purpose is to eliminate or prevent social hazards, to conserve resources, and to correct economic abuses. Regulations to standardize and grade commodities, to guard the food and drug supply, to set up defenses against agricultural pests and diseases, and to protect the public against fraud and extortion serve many ends at once. There in an even wider benefit: the regulatory laws promote agricultural and social welfare by raising technical and commercial standards. This is a positive gain which adds greatly to the negative benefit that results from protection against dangers to health and against commercial dishonesty.

BENEFITS TRANSCEND PREVENTION OF ABUSES

The Grain Standards Act and the Cotton Standards Act are examples of regulatory laws that result in benefits far greater than the mere prevention of abuses. These statutes do, of course, contain penal clauses for the prevention of improper trade practices. Probably more important, however, is their provision for fixed commodity standards, which encourage the production of improved commodities,

and facilitate trade. Provisions of the Grain Standards Act promote a uniform method of grading in the general interest.

Market regulation and market service make an extensive network of coordinated activities in the Department. Among numerous laws that regulate the cotton, grain, livestock, and other commodity markets are: the Tobacco Inspection Act; the Perishable Agricultural Commodities Act; the Standard Container Act of 1916; the Standard Container Act of 1928; the Produce Agency Act; the Peanut Stocks and Standards Act; the Tobacco Stocks and Standards Act; the Cotton Grade and Staple Statistics Act; the Warehouse Act; the Wool Standards Act; the Export Apple and Pear Act; the Packers and Stockyards Act; the Federal Seed Act; the Cotton Futures Act; the Cotton Standards Act; and the Grain Standards Act.

Some of the foregoing laws require mandatory standards; the others require only optional ones. Official standards must be used in the marketing of grain and cotton in interstate commerce. Permissive standards apply to the principal classes of livestock and meats and to many field products; they cover most of the wholesale distribution of some products. Inspection and grading services mesh with the standardization work. Formerly scattered in the Department's bureaus, market regulation as newly grouped promises to be considerably more effective and economical.

Federal legislation has brought important agricultural commodities dealt in on organized exchanges under the Commodity Exchange Act, the chief task of which is to supervise trading in futures. Enacted June 15, 1936, the Commodity Exchange Act strengthened and expanded the Grain Futures Act, and added six commodities to those previously under Federal market supervision. It promotes fair practices and honest dealing on the commodity exchanges and provides a measure of control over speculative activity which often demoralizes the markets. There is a Commodity Exchange Commission composed of the Secretary of Agriculture, the Secretary of Commerce, and the Attorney General. After notice and hearings this body may limit speculative trading on contract markets.

The Commodity Exchange Administration is a unit of the Department's coordinated marketing services. Among other things, it endeavors to protect the margin moneys of customers of futures commission firms. All futures commission merchants must treat and deal with margin moneys, including securities and property, as belonging to their customers. They may not commingle such funds with other funds or use them to margin the trades or contracts of persons other than the owners. Excessive trading by individuals or groups is against the rules. The Commodity Exchange Administration promulgates rules to prevent frauds and cooperates with committees of the exchanges for the improvement of trading practices and rules.

Regulatory and service laws administered by the Department promote seven main objectives: (1) Improvement of the quality of crops and livestock; (2) improvement of marketing conditions; (3) prevention of price manipulation and fraud; (4) marketing control; (5) protection of consumers; (6) protection of the public interest through the conservation of resources; and (7) protection of livestock from cruelty.

EVOLUTION OF THE DEPARTMENT

It was Benjamin Franklin who planted the seed that became the Department of Agriculture. Franklin was in England before the Revolution as an agent of the Commonwealth of Pennsylvania. In colonial times the most urgent need was the introduction of suitable agricultural plants from abroad. Although not primarily a farmer, Franklin owned land and realized the importance of farming to the Colonies. He sent home silkworms, mulberry plants, and specimens of other plants that he thought might do well here. After the Revolution American consuls abroad followed his example. Jefferson, as the first Secretary of State, took great interest in the introduction of plants and animals. It became the practice of the Patent Office, which was then in the State Department, to receive and distribute the cuttings, and side by side with its main function the Patent Office developed also a kind of division of agriculture. This was the progenitor of the existing institution.

In 1839 Congress took the memorable step of appropriating $1,000 to the Patent Office for collecting and distributing seeds, prosecuting agricultural investigations, and procuring agricultural statistics. These are basic Federal duties to this day. Previously the Commissioner of Patents had imported and distributed seeds without official warrant. Congress had ignored various requests from agricultural societies for the systematic collection of agricultural statistics, and had generally taken the position that special aid to agriculture was not a Federal responsibility. The appropriation of $1,000 in 1839 was the first definite congressional response to an obvious agricultural want which many had recognized in colonial times.

LANDMARKS IN DEPARTMENT'S PREHISTORY

As early as 1776 John Adams introduced in the Continental Congress two resolutions for the encouragement of agriculture through governmental assistance. One resolution proposed the encouragement of certain kinds of production, and the other urged the establishment of agricultural improvement societies. George Washington proposed Government aid to agriculture in his first annual message to Congress; in his last message he approved institutions "supported by the public purse" for the promotion of agriculture. The House appointed an agricultural committee in 1820, and the Senate in 1825. Opinion moved only very slowly, however, toward acceptance of the idea that plant introduction, agricultural research, and the collection of crop statistics are legitimate and necessary Federal Government functions.

Farmers welcomed plant introductions, but they attached small value to agricultural science. Land was abundant and cheap; it was simpler to expand the acreage than to work for higher yields per acre. Plant breeding was unknown; animal breeding, rudimentary. Insect pests bothered the farmers little because farms were small and scattered, the risk of importing serious pests was small, and native insects at first did not attack the introduced crops. Only the better

educated farmers wanted crop statistics, and grasped the danger of leaving the collection of such data in private hands. In the 1830's and 1840's great changes took place, which revolutionized the attitude of the farmers toward agricultural science and service through public agencies. The outcome was the creation, during the stress of the Civil War, of the United States Department of Agriculture.

MARKETING, URBAN GROWTH, AND WESTWARD MIGRATION

The need was pressing. Westward migration was in full swing. The machine age in agriculture had arrived. Farming had ceased to be a bundle of trades and had become specialized; no longer was nearly every farm also a factory for making clothing, furniture, farm tools, harness, and countless other things. Manufacturing had developed; our cities had become wealthy and populous. Steamships had brought Europe nearer, and railroads had penetrated the West. England had repealed the corn laws; all western Europe, with its ever-growing industrial populations, had come to depend on American grain, cotton, and meats in ever-mounting quantities. Our farm population, which had been about 75 percent of the total in 1830, dropped to 50 percent in 1850, though the total farm population continued to increase. Migration, railroad building, and invention moved agriculture westward, and plunged it into the money economy. Farmers could no longer dispense with science in production and economic information in marketing, and they turned for help to the Government.

Many farmers had long wanted a Federal agricultural agency. In 1817 the Berkshire (Mass.) Association for the Promotion of Agriculture and Manufacturing petitioned for a national board to help agriculture and manufacturing. Agricultural societies demanded Federal assistance to agriculture. The appropriation of 1939 was a response to repeated requests for crop statistics and technical information. In 1841 the Agricultural Society of the United States came forward with proposals for additional Government aid to agriculture, and though this society lived only a year, the movement it started lived on.

Ten years later another national agricultural society arose with the same main purpose. This was called the United States Agricultural Society; its principal demand was the establishment of a Federal Department of Agriculture. There was a movement in some of the States for the establishment of State colleges of agriculture. In 1858 the House Committee on Agriculture considered a bill to establish a Federal Department of Agriculture, and in 1861 President Lincoln endorsed the proposal in a message to Congress, in which he suggested that an agricultural and statistical bureau might profitably be organized.

Opinion was not unanimous with regard to the proposal. Objections from the South lapsed when the southern Senators and Congressmen resigned. But many doubted that the farmers really wanted a Department of Agriculture. One Senator declared in the Congressional debate that he did not think "one in a hundred farmers of this country * * * has any idea of such a proposition, ever thought of it in his life, or ever will think of it [the Department] if we establish it."

ORGANIC ACT PASSED IN CIVIL WAR YEAR 1862

Farmers contradicted that misapprehension. Agricultural societies, and particularly the United States Agricultural Society, demanded representation for their industry in the Federal Government. The Union's needs in the Civil War added strength to the proposal. The Union wanted export trade for the purpose of obtaining European credit; also it had special need of fibers. Congress revised and passed the measure on May 15, 1862. Five days later it passed the Homestead Act, and on July 2, 1862, the Land-Grant College Act. These three laws became the foundation of our agricultural policy for the next half century.

Agricultural comissioners administered the Department from 1862 to February 1889. Then Congress raised the Department to Cabinet rank, and Norman J. Colman, previously commissioner, became the first Secretary of Agriculture. Succeeding Secretaries were: Jeremiah M. Rusk (1889–93), J. Sterling Morton (1893–97), James Wilson (1897–1913), David F. Houston (1913–19), E. T. Meredith (1919–21), Henry C. Wallace (1921–24), Howard M. Gore (1924–25), W. M. Jardine (1925–29), Arthur M. Hyde (1929–33), Henry A. Wallace (1933–).

In the first year of its existence the Department established a Division of Chemistry, and in the second year a Division of Entomology. Congress appropriated $64,000 to the Department for the investigation of crop production, plant and animal diseases, and insect pests. In 1884 Congress created the Bureau of Animal Industry mainly to combat diseases of livestock. In 1887 came the Hatch Act to aid research in the agricultural experiment stations and to encourage more extensive agricultural research and service through Federal-State cooperation.

GROWTH OF DUTIES AND RESPONSIBILITIES

The era of good free or cheap land was drawing to a close. No longer could farmers readily exchange worn-out land for new, or neglect science as a means of increasing their income. The chance to expand farm acreage indefinitely was gone, and the dramatic character of the final land rushes apprised everyone that future needs for production would have to be met out of the growth of science rather than out of the growth of the farm acreage. Consequently, from 1890 on, the Department's duties and responsibilities increased rapidly. Existing units of the organization were merged and new units created to carry on research, service activities, and regulatory-law administration. Meat inspection became an important phase of the Department's work under the Meat Inspection Act of 1890. After the turn of the century came numerous regulatory laws, among them the Animal Quarantine Act of 1901, the Grain Standards Act of 1901, the Food and Drugs Act of 1906, the Plant Quarantine Act of 1912, and the Packers and Stockyards Act of 1912. Cooperative extension work in agriculture and home economics was provided by the Smith-Lever Act of May 8, 1914, under which a Nation-wide Extension Service was set up. Subsequent legislation provided increased extension funds.

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By this time farm production had increased enormously in the United States and throughout the world. New countries with immense areas of fertile land were competing in the European market. Profitable farming required reductions in the costs of marketing and distribution and also a nicer adjustment of supply to demand. There was need for better crop and market information to guide production and to restrain improper speculation. Accordingly, the Department established first an Office of Markets and Rural Organization, then a Bureau of Markets and Crop Estimates, and eventually a Bureau of Agricultural Economics. It had become clear that the highest skill in production, if exerted blindly, could not make prosperous farmers or insure a stable and dependable supply of food and fibers. It came to be evident finally that production and marketing should be treated not separately but together as the two halves of a single problem.

Land-utilization research followed. Forestry and forest economics became an important departmental function. With augmented resources the Department aided farmers in breeding better plants and animals; in controlling the diseases of livestock; in checking or eradicating insect pests; and in the more efficient use of agricultural chemistry. Many of its activities helped industry as well as agriculture, notably crop reporting, chemical investigations, and meteorology. The Weather Bureau, which had been transferred to the Department of Agriculture from the War Department in 1891, developed services important to all branches of the national economy.

CONVERGENCE OF NEW PROBLEMS

In the depression that followed the crisis of 1929, national problems that had been growing and brewing for a long time all seemed to arrive at once. The closing of the frontier, the rise of nationalism throughout the world, the opening of new lands in other countries, the loss of our foreign markets, the advance of machine agriculture, the ruthless waste of resources over a long period of expansion and exploitation, and the loss of opportunities in cities for the surplus population that formerly flowed away from the land—all these factors coincided and called for the formation of new land and agricultural policies for the United States. Much of the responsibility fell necessarily on the Federal agricultural agency.

Congress directed the Department to develop many new agencies and to expand and give new duties to some of the older ones. New laws required the Department, in cooperation with farmers, to take an increased part itself in the practical application of research findings. Its research workers could no longer be specialists exclusively. They had to think of the whole job, as well as of their own detail, and to help also in administrative work. Up to that time the institution had been a well-organized efficient branch of the Government, entirely capable of doing the jobs assigned to it. It could continue as such, and could handle its new jobs, only by making important administrative changes. The bureaus could not themselves coordinate their work into balanced, comprehensive action programs. There was need for administrative unity. Various changes brought related functions together and geared them to action through program planning. The result, as already mentioned, was practically a new Department of Agriculture.

THE PRESENT STRUCTURE

Shortly after the adoption of the Mount Weather agreement, Secretary Wallace reorganized the Department itself in line with the requirements of the action programs. Congress had indicated the administrative procedures only in a very general way; in the main it had left the development of appropriate agencies and methods to the Secretary of Agriculture. The assignment of new duties to the Department had created new administrative problems and had exacted closer coordination of research, administration, and action. Each year, from 1933 to 1938, the Department had made certain administrative changes, designed to facilitate its cooperation with farmers and with State and local agencies. These changes, however, did not entirely fill the bill. Instances of duplication, overlapping, and cross purpose among the operating agencies persisted. There was need for more comprehensive action, with harmony, balance, and mutual support among the cooperative programs as the supreme objective.

Accordingly, in October 1938 the Secretary announced some major departmental changes, which synchronized with the Federal-State relationship established by the Mount Weather agreement. The new set-up emphasized centralized basic planning; farmer participation in forming and executing programs; coordination of program operation on farms, forests, ranges, and watersheds; and the grouping of related tasks within the Department so as to expedite services to the public. General program planning in the Department came under the leadership of the Bureau of Agricultural Economics, with the findings subject to review by an Agricultural Program Board. Various bureau consolidations brought together related functions in marketing, regulatory-law administration, and research in soils, agricultural engineering, and farm-product and byproduct utilization.

Needless to say, the structure of the Department is vital to all its operations, especially those required in the action programs. True, the most perfect set-up cannot in itself be a guarantee of good administration. There must also be character and capacity in the administrative personnel. Good staff work, however, is impossible in a bad, or antiquated, administrative framework or under conditions that produce conflicts of administrative jurisdiction and even stoppages of the machine. In reshaping the Department for greater efficiency in its newer tasks, the Secretary laid down the basic principle that policy making should be centralized and operation decentralized as much as possible. Unified basic planning and program building for the Nation, for watersheds, for types-of-farming regions, and for particular areas, are the primary purpose. Then come the detailed planning and action of the operating agencies jointly and severally, in which process they cooperatively develop standards and criteria. The general aim is to bring crop adjustment, soil conservation, marketing, surplus removal, public land buying, rural rehabilitation, and the older features of the Department's work into better synchronization.

THE GENERAL ADMINISTRATIVE STAFF

Besides the Secretary of Agriculture, the general administrative staff of the Department includes the Under Secretary, the Assistant Secretary, the Land Use Coordinator, the Solicitor, and the Directors of Research, Extension, Information, Marketing and Regulatory Work, Personnel, and Finance. The Under Secretary and the Assistant Secretary aid the Secretary in developing the general policy of the Department in important public and official contacts. They act for the Secretary in his absence. The six directors, the Land Use Coordinator, and the Solicitor coordinate work of the type implied by the titles of their positions.

Major departmental units, each supervised by an officer who reports directly to the Secretary, are: Agricultural Adjustment Administration, Bureau of Agricultural Chemistry and Engineering, Bureau of Agricultural Economics, Agricultural Marketing Service, Bureau of Animal Industry, Office of Budget and Finance, Office of C. C. C. Activities, Commodity Credit Corporation, Commodity Exchange Administration, Bureau of Dairy Industry, Bureau of Entomology and Plant Quarantine, Office of Experiment Stations, Extension Service, Farm Credit Administration, Farm Security Administration, Federal Crop Insurance Corporation, Federal Surplus Commodities Corporation, Food and Drug Administration, Office of Foreign Agricultural Relations, Forest Service, Bureau of Home Economics, Office of Information, Office of Land Use Coordination, Library, Division of Marketing and Marketing Agreements, Office of Personnel, Office of Plant and Operations, Bureau of Plant Industry, Rural Electrification Administration, Soil Conservation Service, Office of the Solicitor, and Weather Bureau.

These administrative units are subdivided for convenience in dealing with special work. Details of organization within them are given in the succeeding chapters of this publication. The work of all units is coordinated with the activities of the State colleges and experiment stations, in some cases by formal agreement, and in others by voluntary cooperation.

THE CENTRAL PLANNING AGENCY

Central in the Department as it stands today is the main planning agency, namely, the Bureau of Agricultural Economics, which is also the economic fact-finding agency. It develops plans and programs for the whole Department, as a basis for the entire pattern of agricultural, conservational, and marketing services. This overall planning molds the several programs into a general program, and correlates the main features with regional and State requirements. The action agencies do their operational or detailed planning within the framework thus provided, in the development of which they have a constant part. There is no sharp break between the over-all and the detailed planning. On the contrary, the planning Bureau has definite cooperative relationships with the Agricultural Adjustment Administration, the Soil Conservation Service, the Farm Security Administration, the Forest Service, and the other action agencies. These relationships have been carefully defined in memoranda of understanding, and allow constantly for readjustments.

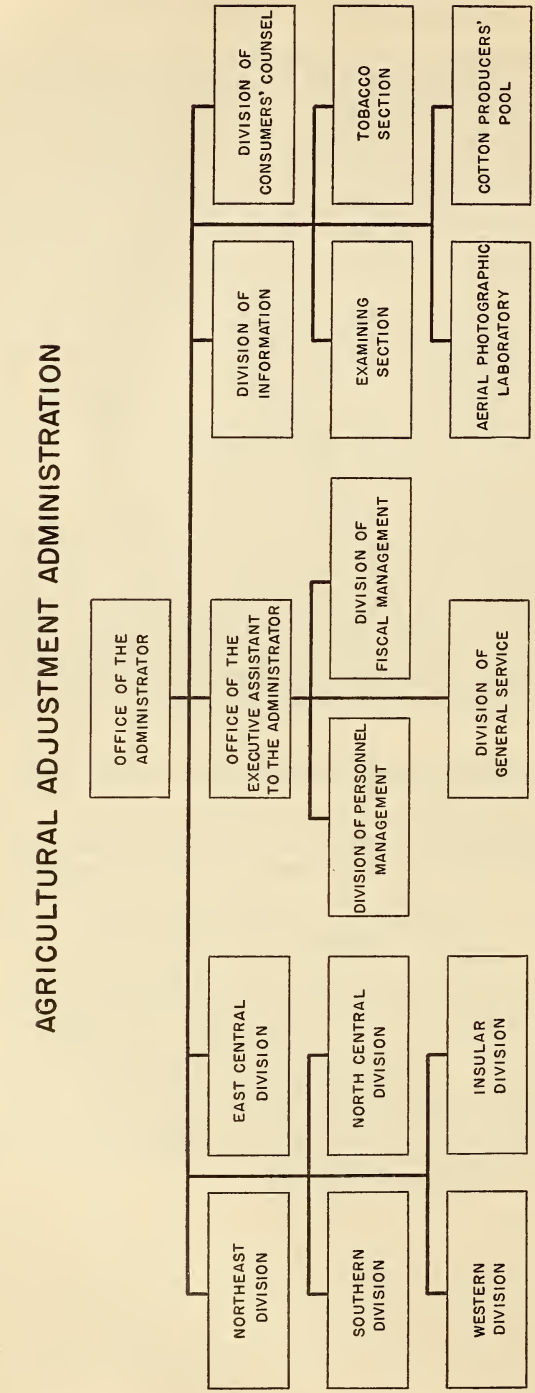
AGRICULTURAL PROGRAM BOARD

After developing the main objectives and procedures, in which task it works cooperatively with the operating agencies, the Bureau of Agricultural Economics refers them to an Agricultural Program Board for final consideration in the light of their administrative feasibility. This board is established in the Office of the Secretary. The Land Use Coordinator is chairman and executive officer. The other members are: the Director of Research, the Director of Extension, the Director of Information, the Director of Marketing and Regulatory Work, the Solicitor of the Department, the Chief of the Bureau of Agricultural Economics, the Administrator of the Agricultural Adjustment Administration, the Associate Agricultural Adjustment Administration Administrator in charge of Marketing and Marketing Agreements, the Chief of the Forest Service, the Chief of the Soil Conservation Service, the Administrator of the Farm Security Administration, the Manager of the Federal Crop Insurance Corporation, the Chief of the Sugar Division, and three additional members appointed by the Secretary.

It is the function of the Agricultural Program Board to review and evaluate the plans developed by the Bureau of Agricultural Economics, and to make recommendations with regard to them from three standpoints: (1) The interests of farmers and of the general public; (2) their administrative feasibility and practicability; and (3) the over-all needs of the Department. As part of this function, the board surveys constantly the land use activities of the Department, judges them as to their soundness and effectiveness, and from time to time makes recommendations thereon to the Secretary of Agriculture.

UNIFIED COUNTY PROGRAM IN EACH STATE

One of the first fruits of the reorganization was a procedure for a unified agricultural program on an experimental basis in each of the 48 States. The Secretary approved it on February 2, 1939, and in several States it is under way. In a selected county in each State the procedure will develop an integrated land use, adjustment, and rehabilitation program. Farmers and representatives of the State agricultural colleges and other State agencies will work it out in cooperation with administrative agencies of the Department. It will take account of shifts in land use, changes in acreages of crops and livestock, adjustments in farm organization and farm practice, trends in rural population, characteristics and conditions of land ownership, and the general nature of local institutions. How these conditions can be favorably altered is the problem. Tackled as a whole, through a joint attack on all the segments, it should yield far more readily than it would to piecemeal methods.


AGRICULTURAL ADJUSTMENT ADMINISTRATION
OFFICE OF THE ADMINISTRATOR
OFFICE OF THE EXECUTIVE ASSISTANT TO THE ADMINISTRATOR
DIVISION OF CONSUMERS' COUNSEL
DIVISION OF INFORMATION
DIVISION OF FISCAL MANAGEMENT
DIVISION OF PERSONNEL MANAGEMENT
DIVISION OF GENERAL SERVICE
TOBACCO SECTION
EXAMINING SECTION
COTTON PRODUCERS' POOL
AERIAL PHOTOGRAPHIC LABORATORY
NORTHEAST DIVISION
EAST CENTRAL DIVISION
SOUTHERN DIVISION
NORTH CENTRAL DIVISION
WESTERN DIVISION
INSULAR DIVISION

THE ORGANIZATION UNITS

AGRICULTURAL ADJUSTMENT ADMINISTRATION

The Agricultural Adjustment Administration is the agency of the Department of Agriculture that administers legislation designed to help farmers carry out cooperative programs to conserve the Nation's soil resources, to stabilize market supplies and prices of farm products, and to bring about a more equitable relationship between the incomes of farmers and nonfarm groups.

Millions of acres of badly eroding farm land, a sharp decline in farm buying power in the years following the World War, and recurring unsalable surpluses of farm products made cooperative action in dealing with the farm problem increasingly necessary.

HISTORY OF THE A. A. A.

In May 1933 Congress passed, and President Roosevelt approved, the Agricultural Adjustment Act "to relieve the existing national economic emergency by increasing agricultural purchasing power." Under authority conferred by this act, the Agricultural Adjustment Administration was empowered to make benefit payments to farmers who cooperated in effecting an adjustment in farm production so as to eliminate the huge crop surpluses which were depressing farm prices. A serious drought in 1934 made it difficult to evaluate the part that the farm program played in the improvement in farm income, but improvement was widespread and pronounced, and referendums held in 1935 indicated clearly that farmers favored a continuation of the adjustment policies.

In January 1936, however, the Supreme Court invalidated important sections of the act which provided the funds for carrying out the program. However, the basic program for wiser land use was continued under new legislation administered as before by the Agricultural Adjustment Administration. The ultimate effect of the adverse decision was to hasten a transition to a long-range program which had already been started.

This more permanent program was begun under the Soil Conservation and Domestic Allotment Act approved in February 1936. This act shifted the primary emphasis of the cooperative program from production adjustment to soil conservation. It permitted the retaining of the earlier goal of a more equitable balance between farm and industrial income, but sought to reach the goal by bringing about a better balance between soil-conserving crops and soil-depleting crops which were being produced in surplus. In substitution for the funds formerly made available by the invalidated processing taxes, the act authorized the direct appropriation of funds not to exceed 500 million dollars annually.

In February 1938, when farmers were again seriously threatened by crop surpluses, Congress passed, and President Roosevelt approved, the Agricultural Adjustment Act of 1938. This act strengthened the provisions of the Soil Conservation and Domestic Allotment Act and extended to growers of five basic commodities—cotton, corn, wheat, tobacco, and rice—a more effective plan of voluntary cooperative balancing of soil-depleting and soil-conserving crops and the opportunity to control the marketing of surpluses so as to help stabilize market supplies and prices of farm products.

THE THREE PHASES OF THE A. A. A.

Briefly, the history of the Agricultural Adjustment Administration follows three distinct phases, each the result of major legislation passed by Congress to meet the need for more cooperative action in solving national farm problems. The first phase extends from the passage of the Agricultural Adjustment Act in May 1933 to the invalidation of some of its important provisions in January 1936. This is the production-adjustment period. The second phase extends from the passage of the Soil Conservation and Domestic Allotment Act in February 1936 to the passage of the new Agricultural Adjustment Act just 2 years later. This might be called the soil conservation period, even though soil conservation remains an important objective in the third phase, which began with the passage of the new Agricultural Adjustment Act in February 1938 and is now in progress. It adds to the program for soil conservation a program for acreage adjustment and stabilized marketing.

THE EVER-NORMAL GRANARY PLAN

The history of American farm production is one of years of overflowing granaries alternating with occasional years of unfilled granaries, with the result that in 1 year the farmer has suffered because he has had to dump his products on the market for the little he could get for them, and the next year, if the crop happened to be poor and the granaries were only half full, the consumer in the city has had to pay scarcity prices. The present program provides governmental assistance in storing the surplus of good years so that there will be no scarcity in bad years. By thus leveling off the bad years with the good, neither the farmer nor the city consumer is likely to experience wasteful oversupplies in 1 year and high-priced scarcity in another.

Since producers generally do not have the capital and other facilities to store their entire crop from one year to another, there is a scramble for the market in any year when it appears that there will be a surplus. The dumping of a large crop on the market in a shorter than usual period causes waste and otherwise clogs the facilities for handling the product. To meet such emergencies the program provides Government loans to enable farmers to withhold part of their marketings until a later, more favorable time.

In years of quite unusual surpluses, when the cooperation of all producers would seem to be necessary if serious price depressions are to be avoided, the program makes possible the use of marketing quotas. Such quotas, which are a means of insuring the equitable sharing of a limited market, can be put into effect only if two-thirds

or more of the producers who vote in a referendum of producers of the crop are in favor of making them effective. Under the plan each producer is allotted his share of the marketings, which is referred to as his marketing quota. A penalty is provided on his marketings in excess of his quota. Thus, each producer is able to market his share of the normal domestic consumption and exports and the surplus, being distributed among the producers, is not excessively burdensome to any one of them.

Such a plan, moreover, requires a cooperative avoidance of wasteful overproduction, lest surpluses get beyond control. In this matter the plan dovetails in with the conservation programs begun under the Soil Conservation and Domestic Allotment Act, which seeks a better balance between the soil-depleting crops, which are frequently overproduced, and the soil-conserving crops, which are all too frequently underproduced.

THE OPERATION OF THE COOPERATIVE PROGRAMS

The Agricultural Adjustment Administration represents the Department of Agriculture in these cooperative measures. It makes payments to cooperating farmers who plant within acreage allotments which represent the individual's share of the desirable total national acreage. Maximum payments are available to farmers who achieve the soil-building goal for their farms in addition to planting within their acreage allotments of soil-depleting crops.

Participation in the program is voluntary. The farmer may cooperate or not as he chooses. Marketing quotas, however, if approved by a two-thirds vote in a referendum open to all producers affected, apply to all commercial producers of the commodity concerned. The A. A. A. program thus provides an opportunity for farmers to cooperate in adjusting their acreage in line with the needs of the Nation for balanced supplies and with the needs of the soil for better husbandry. In addition, in years of large harvests it provides for loans on stores of surplus commodities, and for cooperative means of protection against market collapse.

If the farmer does not choose to cooperate, the program in no way restrains him, except as he might seek to nullify the cooperating farmers' attempts to secure an orderly marketing of their products in interstate commerce. In this case, a marketing penalty is levied against both cooperators and noncooperators for any marketing of certain crops in excess of quotas.

THE FIELD ORGANIZATION

The local administration of the A. A. A. farm programs is in the hands of community, county, and State committees of farmers. These committees are assisted in their work by regional representatives of the A. A. A. and by Extension Service officials.

THE COMMUNITY COMMITTEES

All cooperating farmers are members of county agricultural-conservation associations, and community committees are elected annually from local members of these associations. Such committees are limited to three members. Among their duties are such matters as

preparing, checking, and approving forms used in connection with the programs; recommending acreage allotments and soil-building goals for farms in the community; assisting in checking performance, as a preliminary step in the granting of payments and loans; and helping county committees and extension agents in the educational work of the programs.

In 1938 there were 3,006 county agricultural-conservation associations in the United States, with a total membership of about 5,800,000 farmers. Within these associations there were 23,487 community committees, the members of which were paid at a per diem rate for time actually spent in the discharge of their duties.

THE COUNTY COMMITTEES

County committees of three farmer members are elected by county delegates chosen by the cooperating farmers at the same time the community committees are elected. The county committee elects a secretary, who may be the county agent; in case the county agent is not elected, he is nevertheless an ex officio member of the committee without power to vote.

The county committees review forms and other documents filed in the county in connection with the programs; apportion county acreage allotments among individual farmers in accordance with standards fixed by the act; fix soil-building goals; supervise preparation of applications for payments and loans; and perform general county administrative work. In 1938 there were approximately 3,000 county committees in the United States. Members of these committees are paid on a per diem basis, and administrative costs are pooled with those of the community committees and prorated among the cooperating producers in the county.

THE STATE COMMITTEES

The State committees are composed of farmers, except for the State director of extension service, who is always a member. The farmer members, usually four in number, are appointed by the Secretary of Agriculture, upon recommendation of the Administrator, who generally consults with the State extension director and officials of the principal farm organizations before making his recommendations.

The State committees are in direct contact with the A. A. A. in Washington. They have general administrative charge of the program in the State. Within the framework of law and of national A. A. A. policy, and keeping always in close touch with county and community sentiment, they determine State policies and direct the application of the program in the State. Their work, in part, is to review county recommendations for acreage allotments and soil-building goals; to hear appeals from decisions of county committees; to advise the regional director on general policy within the State; to outline soil-building and range-building practices; to recommend changes in the programs; and to assist in the development of new programs.

THE WASHINGTON ORGANIZATION

The central administration in Washington is headed by the Administrator and an assistant administrator. Under their direction, the responsibility for carrying on the work of the Administration rests upon six regional directors, a director of information, and a consumers' counsel, each of whom is in charge of a division. Under an executive assistant likewise directly responsible to the Administrator, three smaller executive divisions—Personnel Management, General Service, and Fiscal Management—make up the Office of the Executive Assistant to the Administrator.

The six regional directors are responsible for A. A. A. program operations in their respective geographical areas. Always in close contact with the Office of the Administrator as well as with the State committeemen and field representatives in the areas they service, their offices serve as clearing houses in the two-way flow of administrative direction and information between Washington and the field.

The six regional divisions are geographical rather than type-of-farming areas, but each tends to place special emphasis on the major crop or type of farming that is characteristic of the region. The States and Territories that comprise each of these regions, and the leading crop or type of farming in each, are as follows:

(1) The Southern Division: South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, Arkansas, Texas, and Oklahoma. Major crop, cotton.

(2) The East Central Division: Tennessee, Kentucky, North Carolina, Virginia, West Virginia, Maryland, and Delaware. Major crop, tobacco.

(3) The Northeast Division: Pennsylvania, New Jersey, New York, Connecticut, Massachusetts, Maine, Vermont, New Hampshire, and Rhode Island. Major type of farming, dairying and general farming.

(4) The North Central Division: Ohio, Michigan, Indiana, Illinois, Wisconsin, Iowa, Missouri, Nebraska, South Dakota, and Minnesota. Major crop, corn.

(5) The Western Division: North Dakota, Kansas, Colorado, Wyoming, Montana, New Mexico, Arizona, California, Utah, Nevada, Idaho, Oregon, and Washington. Major crops, wheat and range cattle.

(6) The Insular Division: Puerto Rico, and the Territories of Alaska and Hawaii. Major crop, sugarcane.

SUGAR DIVISION

The Sugar Division administers the Sugar Act of 1937. This act is in many respects similar to its predecessor, the Jones-Costigan Act of 1934. The two principal phases of the sugar programs authorized by these legislative enactments have been (1) the quota system, which regulates marketings of sugar in continental United States, and (2) the production-adjustment programs which seek to balance supplies with the marketing quotas for the various sugar-producing areas supplying this market. Adjustment programs under the Sugar Act of 1937 have been in effect in (1) the continental beet area, (2) the mainland sugarcane area, (3) Puerto Rico, and (4) Hawaii. Adjustment programs have also been in effect in Cuba and the Philippines under the laws of those countries.

The Supreme Court decision of January 6, 1936, in the Hoosac Mills case, invalidated the processing tax and production adjustment-benefit payment contracts authorized by the Jones-Costigan Act, but left in effect the quota system. However, continuance of the quota

system without the tax-benefit payment features resulted in a redistribution of the total income of the sugar industry in a manner detrimental to the interests of sugar growers and laborers. This was one of the reasons why Congress passed the Sugar Act of 1937.

The preamble of the Sugar Act of 1937 states that its purposes are—

> to regulate commerce among the several States, with the Territories and possessions of the United States, and with foreign countries; to protect the welfare of consumers of sugars and of those engaged in the domestic sugar-producing industry; to promote the export trade of the United States, to raise revenue; and for other purposes.

The Sugar Act requires the Secretary of Agriculture to determine annually the sugar needs of consumers in continental United States and to allot the estimated quantity, on the basis of fixed percentages, as marketing quotas among the various sugar-producing areas, domestic and foreign, that supply the continental requirements. If any area is unable to furnish its full quota the Secretary is required to reallot the deficit among other areas.

In the event it is necessary to prevent disorderly marketing of sugar, or to afford all interested persons in any domestic area a fair opportunity to market sugar, the Secretary is required to apportion among such persons the area's quota in the form of marketing allotments. These sales allotments are made only after formal public hearing. The Secretary appoints the presiding officers who are to conduct such allotment hearings and who are to prepare the determinations allotting the area quotas. The act provides the standards to be used in establishing the allotments.

The Sugar Act provides conditional payments for domestic sugarcane and sugar-beet growers at the basic rate of 60 cents per 100 pounds of commercially recoverable sugar, raw value, with downward graduations in the case of large producers. The payment conditions include: (1) Nonemployment of child labor, except that of immediate members of the producer's family; (2) payment of fair and reasonable wages to field labor; (3) prevention of soil erosion and improvement of soil fertility; (4) marketing of not more than the farm's proportionate share of the total sugar beets or sugarcane needed to enable an area to meet its quota and provide a normal carry-over; and (5), in the case of producers who are also processors, payment of fair and reasonable prices for sugarcane or sugar beets bought from other growers. Special conditional payments are also made for acreage abandonment and yield deficiency caused by drought, frost, storm, disease, flood, or insects.

The Sugar Divison holds the public hearings, makes the investigations, and prepares the determinations on fair wages for field labor and fair prices for sugarcane and sugar beets. The Division works out all necessary forms and establishes the procedures to be followed by the A. A. A. State and county agricultural conservation committees in checking compliance with payment conditions and in making payments to growers. All determinations, regulations, and marketing allotment orders become effective only when approved by the Secretary.

The Sugar Division cooperates with the Bureau of Customs, Treasury Department, in maintaining administrative control at the

ports of entry over importations of sugar to be charged against the quotas of the countries of origin, and over sugars entered under bond for subsequent reexport and as such not chargeable against area quotas.

The Sugar Act also provides for the imposition of an excise tax on sugar at the rate of 50 cents per 100 pounds of 96° raw sugar, and for a compensating import tax of like amount. The tax phases of the legislation are administered by the Treasury Department.

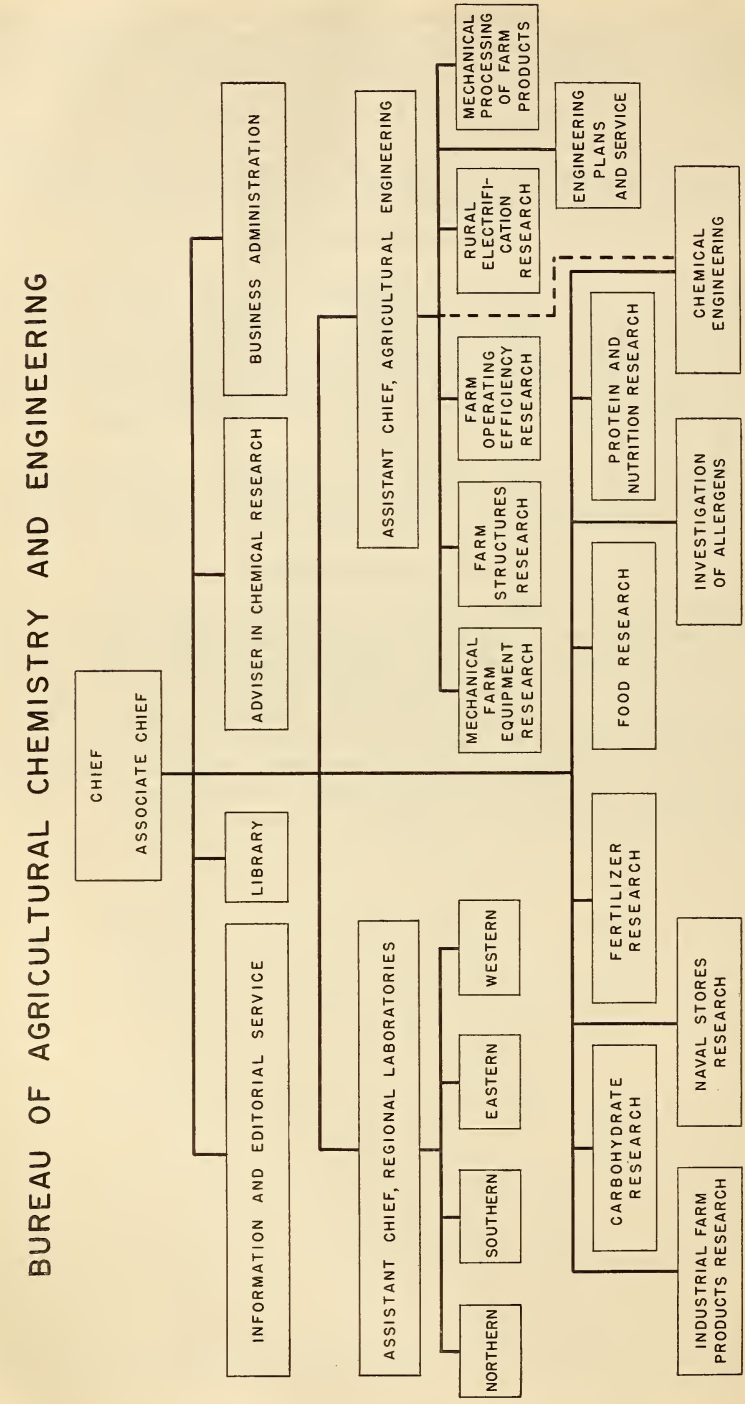
CONSUMERS' COUNSEL

The Division of Consumers' Counsel is one of two nonregional divisions in charge of specialized activities covering the entire country rather than any particular region. It represents the interests of the consumer in the programs and activities of the Administration. Its primary function is to see to it that administrative action to protect the interests of agricultural producers does not run counter to the equally valid interests of the consumers.

In addition to handling a large volume of consumer correspondence, the work of the division includes publication of the Consumers' Guide, a biweekly magazine devoted exclusively to consumer interests.

DIVISION OF INFORMATION

The Division of Information is the other nonregional division with specialized Nation-wide activities. In general, it directs and supervises the informational activities of the Administration. It is a service organization which cooperates with administrative divisions of the Agricultural Adjustment Administration, and with State and county Agricultural Adjustment Administration committees, extension services, vocational agriculture teachers, women's clubs, civic groups, farm organizations, farm journals, and newspapers. It furnishes reliable information in appropriate usable forms.


BUREAU OF AGRICULTURAL CHEMISTRY AND ENGINEERING
CHIEF
ASSOCIATE CHIEF
INFORMATION AND EDITORIAL SERVICE
LIBRARY
ADVISER IN CHEMICAL RESEARCH
BUSINESS ADMINISTRATION
ASSISTANT CHIEF, REGIONAL LABORATORIES
NORTHERN
SOUTHERN
EASTERN
WESTERN
ASSISTANT CHIEF, AGRICULTURAL ENGINEERING
MECHANICAL FARM EQUIPMENT RESEARCH
FARM STRUCTURES RESEARCH
FARM OPERATING EFFICIENCY RESEARCH
RURAL ELECTRIFICATION RESEARCH
MECHANICAL PROCESSING OF FARM PRODUCTS
ENGINEERING PLANS AND SERVICE
CARBOHYDRATE RESEARCH
FERTILIZER RESEARCH
FOOD RESEARCH
PROTEIN AND NUTRITION RESEARCH
CHEMICAL ENGINEERING
INDUSTRIAL FARM PRODUCTS RESEARCH
NAVAL STORES RESEARCH
INVESTIGATION OF ALLERGENS

BUREAU OF AGRICULTURAL CHEMISTRY AND ENGINEERING

The Bureau of Agricultural Chemistry and Engineering was established October 16, 1938, by order of the Secretary of Agriculture. The functions of this new Bureau are to coordinate and continue the scientific, technological, and engineering research on agricultural products, fertilizers, farm fires, and dust explosions, formerly carried on in the Bureau of Chemistry and Soils; and the agricultural engineering research, including studies of farm machinery and mechanical processing equipment and methods for certain commodities, farm structures, methods of heating, ventilating, lighting, use of electricity on the farm, and of farm-operating efficiency, with the exception of that bearing on irrigation and drainage, formerly carried on in the Bureau of Agricultural Engineering. This new Bureau was also directed to administer and operate the four regional research laboratories authorized by the Agricultural Adjustment Act of 1938 for the purpose of conducting research into, and developing new scientific, chemical, and technical uses and new and extended markets and outlets for farm commodities and their products and byproducts.

The Bureau organization consists of the Offices of Chief, Associate Chief, two Assistant Chiefs, Adviser in Chemical Research, Business Administration, Information and Editorial Service, Librarian, and the following research Divisions and regional research laboratories: Carbohydrate, Fertilizer, Food, Industrial Farm Products, Protein and Nutrition, Naval Stores, Chemical Investigations of Allergens in Agricultural Products, Chemical Engineering, Mechanical Farm Equipment, Farm Structures, Farm Operating Efficiency, Rural Electrification, Mechanical Processing of Farm Products, Engineering Plans and Service, and the Northern, Southern, Eastern, and Western Regional Research Laboratories.

ACTIVITIES

The primary function of the Bureau's research is to assist agriculture by the acquisition and dissemination of scientific, technological, and engineering knowledge bearing upon the production of fertilizer materials and mixtures, the improvement of farm homes and other structures, mechanical equipment, farm operating efficiency, and mechanical processing of farm products, rural electrification, the prevention of farm fires and dust explosions, and the conservation and utilization of agricultural commodities and their products and byproducts. Farmers, industries handling and processing agricultural commodities, business enterprises indirectly related to agriculture, science, and the general public profit directly or indirectly from the work of the Bureau of Agricultural Chemistry and Engineering.

Much of the Bureau's work is in cooperation with other branches of the Department of Agriculture, other departments or agencies of the Federal Government, States, State agricultural experiment stations, universities, and other State agencies and institutions, counties, municipalities, business and other organizations and corporations, individuals, associations, and scientific societies.

FERTILIZER RESEARCH DIVISION

For the purpose of maintaining soil productivity at the lowest possible cost through economical utilization of the country's resources of plant-food elements, the Fertilizer Research Division investigates the availability and suitability of raw materials for making fertilizers, develops new and improves old processes for converting atmospheric nitrogen, phosphate rock, and potash into efficient fertilizer materials, makes new compounds of plant-food elements and studies their properties with special reference to suitability for use in mixed fertilizers, designs fertilizer mixtures which promote crop growth without increasing soil acidity, and improves the form of mixed fertilizers to prevent segregation of materials and facilitate distribution in the field.

In order to develop basic data required for solving some of the practical problems, fundamental research is conducted on chemical reactions and their catalysts for the synthesis of fertilizer materials, the mechanism of nitrogen fixation by living organisms, the fixation of nitrogen with organic substances apart from life processes, and the chemical and physical properties of solids, liquids, and compressed gases involved in the production of fertilizer materials.

The investigations on fertilizers have contributed materially toward making the United States independent of foreign sources for nitrogen and potash fertilizer materials, conserving its supply of phosphate minerals, improving the quality of mixed fertilizers, and reducing the cost of fertilizers to farmers.

FOOD RESEARCH DIVISION

The Food Research Division studies fruits, vegetables, and other agricultural products with regard to their chemical composition, utility, and processing for food purposes. Means for determining the degree of maturity of fruits for safe marketing are devised. The causes of deterioration in raw materials and products are determined, and preventive measures are sought. Fundamental investigations are made on the chemistry of enzymes and enzyme action, plant pigments, surface coatings, and flavoring constituents, and on the pharmacology of foods and feeds containing compounds of metals with which they may be contaminated in preparation or processing, or special chemical constituents derived from plants or other materials. Technological studies are directed toward the improvement of methods and equipment for the manufacture of beverages, sirups, concentrates, and other fruit products; utilization of byproducts for food and nonfood purposes; and preservation of fruits and vegetables by canning, quick freezing, dehydration, and pickling. Some of the work on preservation of fruits and vegetables by quick freezing is in collaboration with horticulturists of the Bureau of Plant Industry and State agri-

cultural experiment stations as an aid in the selection of new varieties for commercial production. Field laboratories are maintained in Los Angeles, Calif.; Winter Haven, Fla.; Geneva, N. Y.; Raleigh, N. C.; Corvallis, Oreg.; Weslaco, Tex.; and Pullman and Seattle, Wash.

PROTEIN AND NUTRITION RESEARCH DIVISION

The Protein and Nutrition Research Division investigates food products from the standpoint of their relative nutritive values resulting from the quantity and chemical nature of their proteins and vitamins. It also pursues basic research on the chemistry of proteins, investigates the effect of insecticidal sprays, and of various methods of treating fruits upon their vitamin content, and studies the technology and processing of agricultural products so as to utilize their protein and vitamin contents to the fullest advantage. Proteins of various kinds do not have the same nutritive value. Some are lacking in certain nutritionally essential amino acids, without which young animals will not grow and adult animals will fail to maintain a nutritively normal condition. Others contain relatively excessive amounts of these same amino acids. A knowledge of the quantity and composition of the proteins in different feeds is therefore essential in order that feedstuffs containing proteins of low-food value and those of unusually high food value may be properly mixed for the best and most economical utilization. Investigations have been made on the proteins of corn, wheat, oats, rye, rice, buckwheat, grain sorghums, cottonseed, and of peanuts, soybeans, cowpeas, and other legumes, as well as of other food products.

CARBOHYDRATE RESEARCH DIVISION

The Carbohydrate Research Division studies the chemistry, technology, processing, and utilization of sugars, sirups, starches, and honey and conducts fundamental research on the chemistry of cellulose. It also studies the composition and properties of agricultural oils, fats, and waxes. It collaborates with the Bureau of Plant Industry in investigating the chemical composition and properties of the juices of new sugarcane varieties and the nature, cause, and prevention of deterioration in harvested sugarcane. The work of this Division has resulted in improvements in the technology of sugar manufacture, particularly in chemical clarification processes for sugar-containing juices and the elimination of nonsugars with marked improvement in the quality and uniformity of beet sugars, industrial utilization of sweetpotatoes for starch manufacture, an improved process for the manufacture of fondant for use in confectionery, greater utilization of milk sugar from waste whey, an improved method of processing extracted honey, new maple products and standards for color grading of maple sirup, improved equipment and practices for the farm production of sugarcane and sorgo sirups of better quality and greater uniformity, reduced losses of sugar in harvested sugarcane, and methods for producing inulin and levulose sirup from chicory roots.

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NAVAL STORES RESEARCH DIVISION

The Naval Stores Research Division makes fundamental investigations on the chemical composition, properties, components, and derivatives of oleoresins, turpentine, and rosin from southern pines; technological studies on processes and equipment for producing gum turpentine and rosin and on their uses, handling, and transportation; and semiannual statistical surveys on production and industrial utilization of turpentine and rosin. It collaborates with the Forest Service and with the forestry departments of the Southern States. A naval stores station is maintained in the Osceola National Forest at Olustee, Fla., for experimental and demonstration work on the technology of naval stores.

INDUSTRIAL FARM PRODUCTS RESEARCH DIVISION

The Industrial Farm Products Research Division makes chemical and technological investigations on agricultural products and byproducts that are, or may be, used in industries, particularly for nonfood purposes. The purpose of this work is to increase industrial utilization through chemical processing of surplus food products and inedible agricultural products and byproducts, and to prevent deterioration and waste in raw materials.

Studies are made on the leather-making value of hides and skins with regard to the effects of feed and other factors in the life of the animal, skin parasites, micro-organisms, and the methods of curing and storage. In collaboration with the Bureau of Plant Industry, the tannin contents of plants and plant parts are determined in order to discover native plants, or to introduce foreign plants which may become new sources of much-needed tanning materials in this country. Experiments are made to improve the processes incident to the conversion of hides and skins into satisfactory leather and to determine the factors which influence the usefulness and durability of leather.

Investigations are also made on the production of alcohols and organic acids from sugars and starches by fermentation processes; on the chemical structure and utilization of lignin; on the chemical conversion of oils, fats, and waxes into more valuable materials for industrial uses; on the utilization of materials of agricultural origin for the production of plastics; and on the production of useful products from crop residues and other agricultural byproducts by destructive distillation, fermentation, and mechanical processing. The Division maintains an agricultural byproducts laboratory at Ames, Iowa, in cooperation with Iowa State College and a soybean industrial products laboratory at Urbana, Ill., in cooperation with the University of Illinois, the Bureau of Plant Industry, and the agricultural experiment stations of 12 North Central States.

In collaboration with the Bureau of Plant Industry, the Division makes technological investigations on chemicals that are, or may be, used in the eradication of weeds. It also cooperates with the Commission on Standardization of Biological Stains by making chemical and spectrophotometric examinations of dyes, and by experimenting on the synthesis and purification of biological stains and dyes of antiseptic or therapeutic value.

CHEMICAL ENGINEERING RESEARCH DIVISION

The Chemical Engineering Research Division investigates the causes and prevention of fires and dust explosions and aids other divisions of the Bureau with engineering design, drafting, and development work. Studies are made of the causes of farm fires, especially the spontaneous heating and ignition of hay in storage. Dusts resulting from various agricultural and other materials during handling and processing are studied with regard to explosibility when mixed with air. Improved appliances and practices are devised for eliminating or confining dust and reducing its explosibility, for removing static electricity and other causes of ignition, and for minimizing the effects of dust explosions through special constructive features, such as the use of vents and scored glass windows to relieve internal pressure. Experiments and demonstrations on the explosibility of dusts are made at a testing station at Arlington Experiment Farm.

The Division cooperates actively with the organizations interested in fire prevention and other safety measures and does a great deal of educational work with regard to fire and dust-explosion prevention. As a result of its work there has been a marked reduction in the losses of life and property from fires on farms, in cotton gins and other establishments processing agricultural materials, and from explosions in threshing machines, grain elevators, and industrial plants where dust is formed by the handling or processing of agricultural and other materials.

MECHANICAL FARM EQUIPMENT RESEARCH DIVISION

The Mechanical Farm Equipment Research Division is mainly concerned with the use of power and machinery on the farm to the end of reducing the cost of production of farm crops. The investigations in this field have resulted in the development of a number of mechanical devices which have proved to be more efficient than the machines replaced.

Studies are under way to improve methods and equipment used in the production and harvesting of corn, cotton, and sugar beets. Data from performance tests of various makes of mechanical corn pickers have been responsible for improvement of the machines by the manufacturers to reduce field losses. In cotton production, it was found on one soil type, Red Bay sandy loam, that a few timely operations in preparing the seedbed resulted in a higher yield and indications of better fiber characteristics than when more operations were used as in some of the methods commonly employed there.

At Auburn, Ala., the Division has a tillage-machinery laboratory housing 10 different soils, typical of the Southeast, in tenth-acre bins for studying tillage equipment and its interrelationships with the soils. Equipment over the bins in which the soils are conditioned includes a power car fitted with a sensitive dynamometer to measure the reactions in three directions of tillage equipment operating in the soils. The data thus obtained are proving helpful in improving the design of tillage implements.

The work with sugar beets has developed a cross-blocking machine which has made possible savings up to 35 percent in the costs of

blocking and thinning. The development of a single-seed-ball planter, now about out of the experimental stage, should result in the practical elimination of thinning. Beet harvesters have been studied for several years with the result that a type has now been evolved which seems commercially acceptable under most conditions where tried. It lifts and tops the beets and discharges beets and tops into separate row or piles. With these two labor peaks, thinning and harvesting, mechanized, the need for the drudgery of "stoop" labor will be eliminated.

Investigations with pest-control machinery have resulted in attachments for plows to effect almost complete coverage of corn-crop debris, an important corn borer-control measure. Special attention is being given to the development of equipment to combat insect pests attacking orchards, vineyards, and truck crops, and for the control of certain important plant diseases and noxious weed pests.

The primary purpose of the studies of fertilizer-distributing machinery is to establish a basis for the development of improved fertilizer-depositing equipment and for safer and more effective use of fertilizers. Experiments are now in progress with 18 truck and field crops at 57 locations in 13 States.

FARM STRUCTURES RESEARCH DIVISION

The Farm Structures Research Division undertakes to solve engineering and architectural problems relating to the housing of farm families, sheltering of livestock, and storage and transportation of farm products. Important phases of this work are the determination of optimum temperature, humidity, and air-motion requirements for all types of farm structures, and the development and distribution of plans for improved buildings which will meet the basic requirements for farm use.

Since recent surveys indicated that one-sixth of all farmhouses have deteriorated to a point where they should be replaced by new buildings and that major improvements and remodeling are needed on a very large number of other farms, experimental work is being carried on in Georgia and Wisconsin to determine the best designs for new and remodeled farmhouses under a wide variety of climate and use requirements. Studies of water supply and sewage disposal and of heating and cooking equipment for farm use are also being conducted.

Studies of the storage of grain deal with corn storage in Iowa, Minnesota, Illinois, Indiana, Ohio, and other States; with wheat storage in Maryland, Illinois, Kansas, and North Dakota; and with grain-sorghum storage in Kansas and Southwestern States. The work includes studies of the adequacy of present farm-storage facilities, of the effectiveness of various types of structures, of the relationship of climate to storage problems, and of the development of equipment for drying grain on the farm before storing it.

Studies of the storage of other farm products deal with potato storage in Michigan, North Dakota, and other States; apple storage in Virginia; and design of silos in Maryland and New Jersey. Work also includes laboratory measurements of physical properties of stored products, studies of the transportation of fruits and vegetables, of the cooling of milk on farms, and the development of improved types of oil-burning heaters for frost protection in orchards.

The cooperative plan exchange service is a means of making available to farmers the results of research and practical experience with improved types of buildings. In this work the Bureau cooperates with the State agricultural colleges and the Extension Service in assembling and distributing plans of the most desirable types of farm building for the four main geographic regions of the United States. Catalogs of farm building plans for the Northeast and for the West have been issued, and a catalog for the South is in process of publication. Working drawings of the building plans illustrated in these catalogs are available to farmers of each region through their State agricultural colleges which make a small charge for this service.

MECHANICAL PROCESSING OF FARM PRODUCTS

Two principal projects deal with mechanical processing of farm products. At Stoneville, Miss., there is a cotton-ginning laboratory established for the study of all phases of the ginning of cotton. Any ginning process must naturally injure some of the qualities of the cotton fiber, and the objective of this work is to reduce such injury to a minimum so that the farmer may get as much as possible of the full value represented by the natural quality of the lint. The cotton drier developed in connection with this project was being used in 1939 by at least 800 gins, with important savings to the farmer.

In 1938 studies of the production and harvesting of flax were initiated at Corvallis, Oreg. Extension studies are being made of the harvesting, deseeding, retting, and scutching of fiber flax to reduce the cost of such operations and to improve the quality of the product.

FARM OPERATING EFFICIENCY RESEARCH DIVISION

The Farm Operating Efficiency Research Division studies the application of various agricultural engineering improvements and developments and their coordination in the operation of the farm. It is obvious that any farm business must be well balanced in all its phases, with each element in proper proportion to the others and to the farm business as a whole. It follows that the engineering elements of the farm business must be so selected that they fit into the farm business and that the operating conditions for machines, buildings, and equipment must be made as nearly perfect as is consistent with a due regard for the other elements of the farm business. In order to determine the engineering improvements or changes needed on typical farms and the resulting benefits, studies are being made of typical farms and the benefits determined from the farm records as the various changes and improvements are completed.

RURAL ELECTRIFICATION RESEARCH DIVISION

The objective of the Rural Electrification Research Division is, through research, to further the economic and social welfare of the farm people by the adaptation and application of electricity to farming, rural living, and rural industries. More than 200 different rural uses for electricity have been developed and tested with varying results, but farmers still need factual data before accepting successful equipment and information regarding the adaptation of rural electri-

fication to particular farm requirements. The character of the initial selection of electrical and auxiliary equipment for the farm and home affects the financial and social adjustment of the family for a period of years. It is important, therefore, that installations embody the use of the best knowledge and that they contribute to, rather than burden, the farm income.

ENGINEERING PLANS AND SERVICE DIVISION

The Engineering Plans and Service Division prepares plans and specifications for buildings and other structures and equipment required by this Bureau and other bureaus of the Department outside of Washington. In addition to the actual work of preparing plans and specifications, engineers of this Division check and give technical advice on specifications for equipment and materials for various buildings drawn up by other bureaus. In some cases the engineering and architectural services include the management of projects during construction. Engineers of various classifications are employed, representing such engineering fields as architectural, structural, plumbing, heating, power plant, sanitary, civil, electrical, refrigeration, air conditioning, etc.

Engineers of the Bureau have also done much work on land appraisal such, for example, as the fee and flowage-right appraisals for the War Department on 1,200,000 acres of land in the lower Mississippi Valley and the appraisals of flood damages and of flood-control benefits for the same Department on the Red River tributaries in Oklahoma and on the Tombigbee and Tennessee Rivers in Alabama and Tennessee.

REGIONAL RESEARCH LABORATORIES

Four regional research laboratories are being established, under Bureau supervision and direction, to carry out the provisions of Section 202 of the Agricultural Adjustment Act of 1938, namely, to increase the consumption of the agricultural commodities that are subject to regular or seasonal surpluses by finding and developing new scientific, chemical and technical uses, and new and extended markets and outlets for those commodities and their products and byproducts. Laboratories are being built in Albany, Calif.; New Orleans, La.; Peoria, Ill.; and Wyndmoor, Pa. Occupancy of the buildings is expected in 1940.

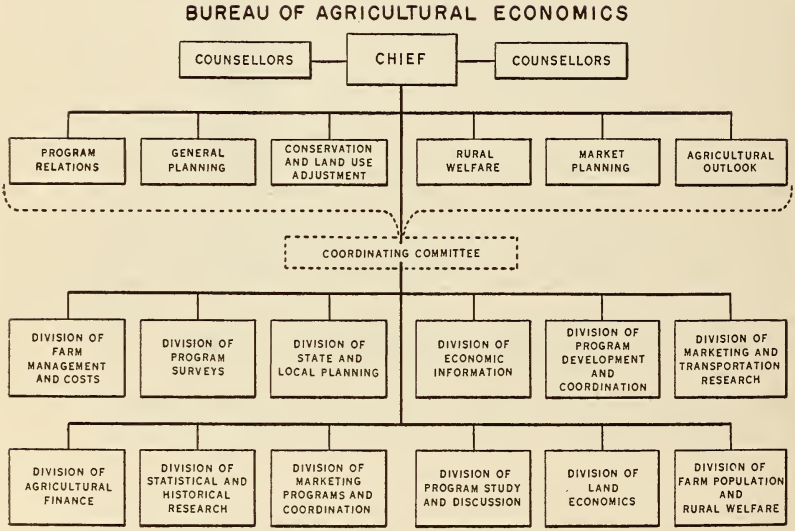
Some research work directed toward the same end has been in progress for some time within this and other bureaus of the Department, as well as in State experiment stations, universities, and the laboratories of private industry. During the period which must elapse before the completion of the new laboratories, a program of research is being worked out which takes account of this related activity in such a way as to assure an energetic attack upon each project without duplication of effort. The necessary basis for that coordination was secured by making an intensive Nation-wide survey of all research being conducted on the utilization of farm products.

The four regional research laboratories will confine their attention initially to 12 major commodities. The northern laboratory will study corn, wheat, and agricultural wastes, such as straws, stalks,

etc.; the southern laboratory, cotton, sweetpotatoes, and peanuts; the eastern laboratory, tobacco, apples, potatoes, milk products, and vegetables; and the western laboratory, wheat, potatoes, alfalfa, vegetables, and fruits. In many cases the research projects will be concerned with general constituents common to many commodities, such as starch, sugars, cellulose, oils, and protein. Technologic development and economic study of existing knowledge will be emphasized strongly, with the expectation that private industry will utilize the results promptly in the expansion of industrial outlets. At the same time, new fundamental knowledge will be sought, so that the inventions and technical advances of the future may have the same sound basis of fact.

BANKHEAD-JONES PROJECTS

The Bureau of Agricultural Chemistry and Engineering participates in the Department's program of basic research in agriculture under the Bankhead-Jones Act of June 29, 1935, which is administered by the Director of Research. Most of these investigations are carried on or supervised by the regular divisions of the Bureau. Thus, research on enzyme action at low temperatures, chemical studies on plant viruses, and the investigation of a process for preserving plant specimens, are carried on by the Food Research Division; and the investigation of hemicelluloses and lignocelluloses, and research in the industrial utilization of soybeans and soybean products are carried on by the Industrial Farm Products Research Division. The investigation of allergens of agricultural products is carried on by a separate laboratory. The Division of Farm Structures is studying problems in connection with the storage of wheat and corn to determine optimum conditions for storage. The Division of Mechanical Processing of Farm Products initiated a Bankhead-Jones project in 1939 to study methods of compressing cotton, with the objective of improving the condition of export cotton.


BUREAU OF AGRICULTURAL ECONOMICS
COUNSELLORS
CHIEF
COUNSELLORS
PROGRAM RELATIONS
GENERAL PLANNING
CONSERVATION AND LAND USE ADJUSTMENT
RURAL WELFARE
MARKET PLANNING
AGRICULTURAL OUTLOOK
COORDINATING COMMITTEE
DIVISION OF FARM MANAGEMENT AND COSTS
DIVISION OF PROGRAM SURVEYS
DIVISION OF STATE AND LOCAL PLANNING
DIVISION OF ECONOMIC INFORMATION
DIVISION OF PROGRAM DEVELOPMENT AND COORDINATION
DIVISION OF MARKETING AND TRANSPORTATION RESEARCH
DIVISION OF AGRICULTURAL FINANCE
DIVISION OF STATISTICAL AND HISTORICAL RESEARCH
DIVISION OF MARKETING PROGRAMS AND COORDINATION
DIVISION OF PROGRAM STUDY AND DISCUSSION
DIVISION OF LAND ECONOMICS
DIVISION OF FARM POPULATION AND RURAL WELFARE

BUREAU OF AGRICULTURAL ECONOMICS

The Bureau of Agricultural Economics is the Department's fact-finding instrument in the field of prices, credit, taxation, land utilization, and the innumerable problems that surround agricultural production and distribution. As an interpreter of economic facts, it fills its most important role in the formulation of agricultural policy.

The part played by the Government in the agricultural situation during the last few years has made accurate research and interpretation in this economic field more essential than ever. As agricultural production, distribution, and prices move more nearly into a consciously directed pattern, it is evident that there must be reliable measuring sticks by which such a pattern can be guided and gaged. To supply these economic measuring sticks is one of this Bureau's functions.

Agriculture should be the source of ample supplies of food and raw materials available at prices that are reasonable to the consumer and yet adequate to provide the basis for satisfactory farm life. At the same time a proper balance should be maintained between agriculture and the other phases of our national life. The primary aim of the Bureau is to help bring about these conditions. To this end it concerns itself with the continual changes and shifts in economic conditions that affect agriculture and studies how farmers may adjust their various activities so as to maintain satisfactory supply-and-demand relationships.

Apart, however, from the national policies which tend to shape the broad outlines of our agriculture, there is a host of continuing problems within the farm business itself—questions of what and how much to produce, the financing of the business, efficient farm management and marketing as well—a large class of economic problems to which this Bureau's work is addressed.

In production studies it deals with the relation of supply to market requirements, with the character of products that the markets chiefly require, and with methods of increasing the efficiency of farm production. Maximum net profits in agriculture result only when there is a complete coordination of the physical with the economic phases of production. Accordingly, the Bureau emphasizes equally the technical economic problems of production on individual farms and the broader problems involved in adjusting production to demand and in advantageously handling and distributing farm products.

COUNTY PROGRAM PLANNING BY FARMERS

In the development of the modern agricultural system a larger and larger part is being played by farmers in the local political units, such as counties, in shaping long-time plans for the development of their agriculture. One of this Bureau's primary functions is to assemble and coordinate agricultural information from farmer

groups, State Agricultural colleges, and other research institutions relative to long-time economic planning in counties or regions. It works with local farm or regional groups and authorities in furtherance of the adoption of sound agricultural programs. The general objective in all this program planning is the ultimate adjustment by the farmers themselves of the Nation's agricultural economy on the basis of the greatest long-time benefit to themselves and the country.

To accomplish these ends the Bureau maintains a representative located usually at the State college of agriculture in each State. This representative is a general coordinator of agricultural planning in his State. He serves as the executive secretary of the State agricultural-planning committee, and through the extension service and other local agencies he works directly with the farmers in each county. Close cooperation is maintained with the State college and authorities. As the county committees, composed of farmers and other rural leaders, shape their local agricultural programs, the State planning committee develops these into a harmonious State program. Then the Bureau of Agricultural Economics fills a like function for the country as a whole.

Thus upon this Bureau falls the important job of translating the local program planning into terms of a national plan which shall be as wisely adjusted to all the economic elements of present and future as is humanly possible. Not only does the Bureau help to unify the local State and county programs into a sound national program, but through cooperation with the governmental action agencies whose activities affect the national program endeavors, to guide all efforts, national, State, and local, to attain this objective.

This county program planning is one of the significant developments in the modern relationship between the Government and the farmer. It gives promise of providing a truly democratic machinery by which an efficiently planned agriculture can be maintained.

RELATIONSHIPS WITH OPERATING AGENCIES OF THE DEPARTMENT

Under a general memorandum of understanding, the Bureau's function, in cooperation with the operating agencies of the Department, is that of providing unified general planning and program building for the Nation, for watersheds, for type-of-farming regions, and for appropriate areas, as guides to all public agricultural programs.

This general planning and program building embraces all appropriate instruments, including erosion control, flood control, rehabilitation, price stability, production adjustment, land-utilization adjustment, highway and other transportation facilities, security of farm tenure, marketing, adjustments in rural institutions and organizations, improvement in the living conditions of rural people, and soil, forest, and wildlife conservation.

The Bureau's function is that of formulating general over-all plans while with each operating agency remains the function of performing detailed or operational planning necessary in administering that part of the agricultural program that is assigned to it for administration.

INCOME STUDIES

One purpose of the Soil Conservation and Domestic Allotment Act is to restore ultimately farm income to a relationship with nonagricultural incomes such as existed during the 5 years preceding the World War.

This objective of income parity for farmers, as embodied in this legislation, necessitates a careful determination of income—both agricultural and nonagricultural—not only current, but also back in the base period. The Bureau is charged with this research which involves, as concerns the farm, detailed estimates of gross income, the collection of quantity and cost data on expenditures, determination of net income, and collection and analysis of the data on income of farmers from outside sources; and with respect to the nonagricultural population, the reconstructing of the estimates of national income, both currently and for the base years. This latter work is being carried forward in cooperation with other agencies.

Much of this research has already been done, and the studies of income from the various important farm enterprises are being published as fast as completed.

RESEARCH ON THE PRODUCTION END

The Bureau's research in farm management is concerned with the means of increasing the income of individual farms of different types, sizes, and locations. The family-size, individually operated farm is the most important producing unit in American agriculture. Farm prosperity, therefore, to a large extent implies satisfactory incomes on family-size farms in different sections of the country.

The public programs instituted to aid American agriculture have greatly increased the need for adequate studies of the problems involved in organizing and operating the individual farm. When economic conditions require major adjustments in farming it is important not only that the individual farmer have access to information which will aid him in determining the defects of such adjustments on his own farm, but that studies of the probable effects on individual farms be available for planning the national adjustment programs.

Research centered on the farm-management aspects of adjustment problems requires information localized by areas, and for different types and sizes of farms. In addition, cost-of-production studies are conducted and current analyses made of expenses and net returns from farming by type of farming, by size, and location. Much of this work is conducted in cooperation with State and local agencies.

REHABILITATION STUDIES

The extensive rehabilitation program going forward with the loan system of the Farm Security Administration necessitates much basic information regarding the conditions under which farmers can reestablish themselves on a self-supporting basis. The Bureau makes farm-management studies in various areas to answer questions as to size and type of business on which rehabilitation clients have the best chance to succeed.

Thus, in the Great Plains States the study indicates that in the better farming counties of the eastern part of this region the need for rehabilitation is slight. In the western areas of low or variable crop yields it is revealed that some sections have been too closely settled and that a more extensive type of farming will be necessary to stabilize farm income. In the most distressed areas drastic readjustments in land use, in the size of the farm unit, and in the type of production are found to be desirable. Research of this type is a necessary prerequisite to public action looking toward the needed adjustments.

CONDITIONS AMONG FARM POPULATION

The direction, as well as the quality and quantity, of migration to and from farms is regarded as an important criterion of rural economic and social conditions at any given time. The Bureau carefully measures such movements annually in order to have this important index reflecting the relative well-being of the people engaged in agriculture.

In addition to this index, the Bureau conducts other studies of the level of living of rural families and is now engaged in developing an index which will reflect the status of families as determined by their possession of, and expenditures for, goods and services. These two indices, supplemented by special field studies, will register the effects of such catastrophies as droughts, depressions, and the like, as well as the influence of such action programs as that of land utilization, the Farm Security Administration, the Farm Credit Administration, and the Agricultural Adjustment Administration upon the level of living.

The important action agencies which make contact with rural families must take into consideration rural customs, attitudes, and beliefs, in the knowledge that failure to consider the farmer's state of mind may mean failure of any given program. The Bureau conducts studies calculated to assist governmental agencies in understanding these relationships with the farm people.

The types-of-farming areas that have been developed from production data are an invaluable basis for developing agricultural policy. The next logical step in this connection is in the delineation of natural cultural areas of the Nation. This would enable policy makers to consider the population, and the psychological and cultural factors, as well as the production factors. Once such rural cultural areas have been determined and described, administrators will be assisted in gearing production policies to peculiar population, cultural, and psychological elements in the various areas. The Bureau is now engaged in mapping and describing these cultural areas.

The farmer's organizations and his community may serve him with varying effectiveness. The more effective his local organizations and agencies, the more easily governmental agencies such as the Extension Service can reach him, and the easier it will be for him to make his desires materialize in action. The Bureau studies farmers' organizations and communities with the view of making it possible for these organizations to become more effective in meeting the farmers' needs.

FARM LABOR

The Bureau makes surveys and studies of the status of farm labor, covering typical agricultural areas. The data show the underlying conditions affecting the supply and demand of farm labor, as well as wages and living conditions. This is a type of research directed at the status of workers who are commonly regarded as on the lowest rung of the agricultural ladder, and the findings may pave the way for betterment where possible.

DISADVANTAGED GROUPS

The way of rural life has changed in the last quarter of a century. For many farmers it has changed for the better; but for too many the living conditions are no better, and in some cases they are worse, than in earlier times. Hundreds of thousands of farm families are living under conditions far below the much vaunted high standard of American life.

Much fundamental research is needed as a basis for governmental action designed to improve farm living conditions. To this end the Bureau assembles information concerning the disadvantaged classes in American agriculture. Such data reveal the areas of concentration of low-income farm families, farm laborers, farm tenants, farm families on poor lands, migrating farm families, and farm families on relief and with low standards of living. The accurate appraisal of these sore spots is the first requisite in any national program of improvement.

TENANCY STUDIES

The Bureau is initiating special studies of the increasingly acute problem of farm tenancy, dealing with the psychology of farm people and their reaction to governmental programs that seek to solve this problem. Cooperative work has been done with several States, investigating the status of farm tenancy therein and providing Governors and legislative committees with research material useful as a basis for legislation.

STATISTICAL RESEARCH UNDERLIES MANY SERVICES

Statistical research is basic to all national programs in aid of agriculture. A multitude of facts, especially about the movements of prices and related supply-and-demand factors, and an understanding of the relationship existing between these complex economic forces, are absolutely essential if farm programs are to be effectively planned and administered. Legislators need to know the facts in order to formulate proposed legislation. Administrators must have the results of these statistical analyses for use in adopting policies and carrying them through.

Not many years ago people had many different and conflicting ideas about what makes prices of commodities move up and down, the effects of tariff rates, and the relations between many general economic factors that enter decisively into the incomes received by

farmers. Partly as a result of painstaking statistical research carried on for many years by the Bureau, definite and reliable answers to many of these problems are now available.

PROBLEMS IN FINANCING AGRICULTURE

Financing agriculture without crippling it has become a problem because commercialized agriculture is no more able to make its annual outlay exactly balance the annual income continuously than is any other industry. However, the agricultural budget is coming closer into balance than it was a few years ago. But this result has been attained only at the cost of loss of ownership of a large number of farms. The size, desirability, and cost of farm-mortgage credit, similar information with respect to short-term credit, public-service changes in the form of taxes, and the cost of natural unavoidable risks, the burden of which might be lessened by insurance in some form, are all problems dealt with in the research program of the Bureau.

MARKETING RESEARCH

Some of the important research work of the Bureau relates to distribution. Its finding and application of facts help to make our marketing machinery more efficient not only by reducing costs, but also by maintaining a freely competitive market in which supplies can be quickly shifted and in which prices can be quickly adjusted to meet changes in the economic situation. The American farmer receives less than 50 cents of each dollar spent by the consumer for food. More than 50 cents of the consumer dollar goes to pay charges for transportation, processing, and marketing. Any saving made by more efficient marketing would be of great benefit both to the farmer and to the consumer.

The Bureau is constantly engaged in research on general problems and public policy with respect to marketing. It is concerned with such questions as the development and effect of marketing agreements and similar devices to stabilize market conditions, and the development of State and Federal legislation which will give adequate protection to the farmer, the dealer, and the consumer without interfering unnecessarily with a free flow of farm products in interstate commerce. It also makes studies of trends and marketing methods and institutions to assist in promoting distribution changes. Some of these studies have shown the practical possibilities of improving wholesale markets for perishables, both at shipping points and at the big terminal cities. Plans are now under way for reorganizing the markets in several cities, largely as a result of these studies.

Changes of far-reaching effect upon farmers have come about in the marketing system in recent years. New ways of preparing and processing foods have been developed, the chain of distribution from farm to home has been shortened by the elimination of some unnecessary links, and public agencies have begun to attack the problem of waste and high cost of handling foods in metropolitan markets.

Outstanding has been the increasing use of motortrucks in transmitting fresh products direct from farm to market, eliminating re-

handling en route, and reducing costs of distribution. Large city markets now receive about half their supply of fresh fruit and vegetables by motortruck.

The increasing public interest in economic problems raised by the growth of large-scale processors and distributors handling agricultural products has led the Bureau into a series of fundamental research studies covering this field, also the study of another subject closely affected with a public interest, namely, the barriers to internal trade in farm products. With respect to the latter, a situation gradually has grown up where we do not have free trade between the States. It appears that public health and sanitation measures may be so designed as to restrict trade across State lines. The same may be said of certain tax laws, of motortruck regulation, of quarantines, of grading, labeling, and packaging laws, and of State-financed advertising of farm products. The Bureau's pioneer research on this subject is bringing to public attention a problem that challenges the attention of both national and State lawmakers.

THE AGRICULTURAL OUTLOOK

For many years the Bureau has been perfecting its research and information service and has prepared annually a detailed statement of the market outlook for each important farm product in the coming season. It also prepares and publishes reports on the agricultural outlook each fall and spring and currently issues periodical statements reviewing the position, with respect to prices and supplies, of all important farm products.

As a part of this general field of work the demand side of the picture also is carefully studied. Research on business and wage conditions is carried forward, giving a basis for evaluating the current and probable income of the consuming public and providing an estimate of the probable effective market for farm products for a season or more ahead.

This is one of the aids furnished to farmers within the broad program designed to better adjust production to demand and thus to stabilize farm income.

TRANSPORTATION STUDIES

Section 201 of the Agricultural Adjustment Act of 1938 authorized the Secretary of Agriculture to make complaint to the Interstate Commerce Commission with respect to rates, charges, tariffs, and practices relating to the transportation of farm products and to prosecute same before the Commission. The Bureau of Agricultural Economics is charged with the duty of conducting research studies having as their objectives the formulation of plans and basis adjustments in such rates, charges, tariffs, and practices.

FUNDAMENTAL LAND PROBLEMS

The Bureau carries on an extensive land use planning program, including especially research in the development of more desirable patterns of land settlement and use under authorization of title III of

the Bankhead-Jones Farm Tenant Act of 1937. It analyzes the economic and social background and maladjusted land areas and plans programs of rehabilitation and adjustment which later are effectuated by purchase of submarginal land through cooperation with State and local agencies. It formulates plans and programs relating to all the uses of the land, including those which involve forestry, soil conservation, farm tenancy, rural rehabilitation, or any agricultural or grazing lands.

The Bureau's land use-planning activity includes the classification of land according to its best economic use; the study of farm-tenure problems; analyses of governmental and legal structures affecting land use; study of land values and taxation problems of local finance; survey of trends in land settlement and methods of promoting farm settlement; exploration of various directional measures for improved land use, such as rural zoning, establishment of cooperative grazing associations, guidance of public- and private-credit programs, and public land purchase.

A highly important and closely related field is that of water utilization. Extensive surveys have been made of the economic background of water development and use, particularly as they affect irrigation, drainage, and development of water for stock in the western Plains. Responsibility for the planning of the program authorized by the Water Facilities Act of 1937 rests with this Bureau.

Extensive water developments in land-utilization projects, particularly in the Great Plains, necessitate, for example, special exploratory surveys of existing supplies of water. As material concerning water resources has been assembled, certain definite problem areas have been demarcated, wherein an improvement in the use of water is vitally essential to the rehabilitation of the population and sound use of land. Land and water-use plans have been completed for areas in Texas, New Mexico, North Dakota, and elsewhere.

The land-planning work in general is focused on selected problem areas where all aspects of land utilization are studied in a coordinated manner. Although certain subjects in this field are treated on a general research basis, the emphasis in land use planning as a whole has been upon the development of practical programs of adjustment which can be put into effect by the action agencies.

Land use planning has, therefore, been guided to provide answers to three basic questions in regard to the areas selected for this work.

(1) Where is the land being used for purposes to which it is economically not suited, and for what uses is such land economically suited?

(2) What methods, such as land purchase, rural zoning, cooperative grazing control and others, can best be used to bring about desirable land use in specific areas?

(3) If changes in land use necessitate a reduction in the number of people using the land in a given area, what alternative opportunities are there elsewhere for the surplus farm population?

In the program to redirect the use of submarginal lands purchased by the Government, such land in the eastern United States is being shifted from farming primarily to forestry, recreation, and wildlife conservation. In the western Plains and intermountain region, de-

velopment of livestock ranges most frequently follows the purchase of land.

In addition to planning the general programs for administration of title III of the Bankhead-Jones Farm Tenant Act, the Bureau also is charged with a like function under the Water Facilities Act, the Flood Control Acts, as amended, sections 1 to 6 of the Soil Conservation and Domestic Allotment Acts, and the Sugar Act of 1937.

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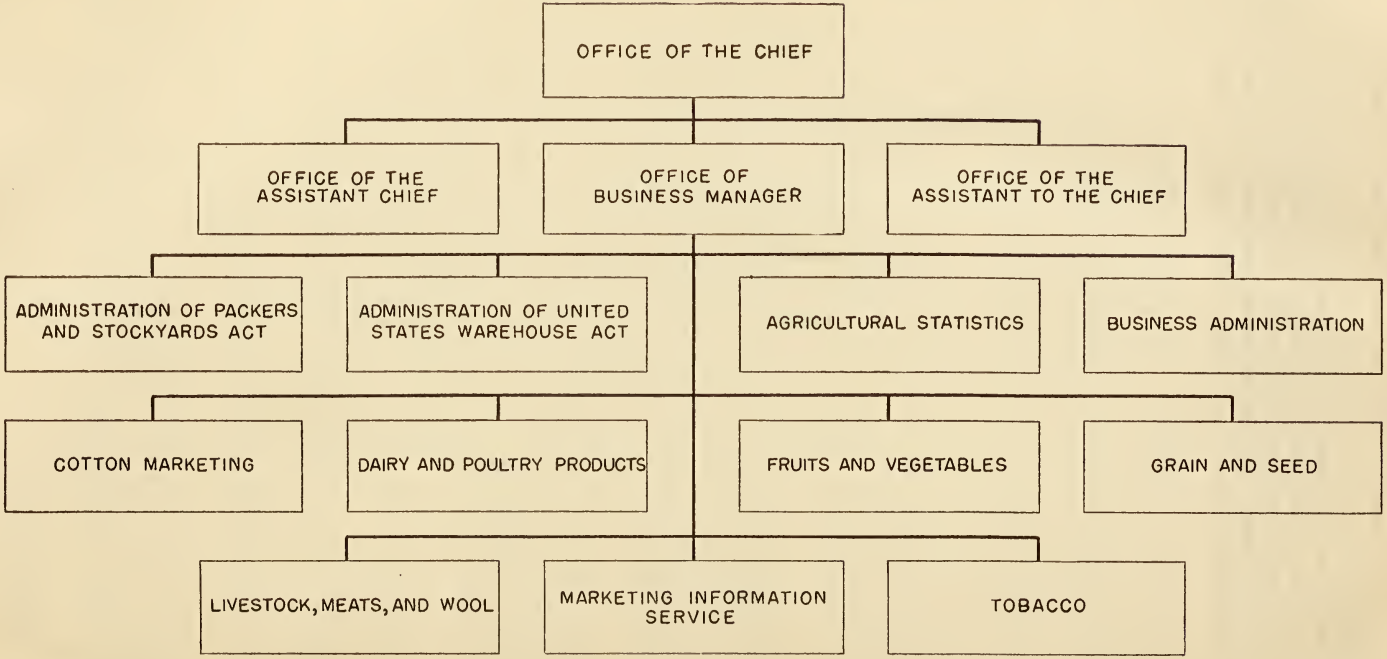
AGRICULTURAL MARKETING SERVICE



AGRICULTURAL MARKETING SERVICE

The Agricultural Marketing Service is a service and regulatory agency concerned with the various phases of marketing farm products.

Efficiency in production and efficiency in marketing go hand in hand toward a successful farm enterprise. Problems in both fields must be attacked with equal vigor and forcefulness. A major role of the Service in working toward these broad objectives is that of fact finding and fact disseminating. The availability of fundamental economic data is essential to an intelligent appraisal of the factors of supply and demand. Such data are of basic importance in the formulation of production and marketing plans and programs, by private, as well as Federal and State agencies.

Every industry recognizes the necessity of keeping informed, and the larger the group the greater is the task of gathering and distributing pertinent information. In the case of agriculture, the job is not minimized by the fact that there are nearly 7,000,000 farmers widely scattered over the country. Each has a right to expect an opportunity to be well informed.

The field service activities of the Agricultural Marketing Service fall within five broad categories: (1) The collection and dissemination of crop- and livestock-production statistics; (2) the gathering and reporting of current market information from terminal markets, shipping points, and producing sections; (3) standardization and inspection to provide a common language in merchandizing and a uniform yardstick for measuring gradations in quality of farm and food products; (4) research and demonstration in standardization, grading, preparation for market, handling, and other related phases of marketing; and (5) the administration of rules of fair play in the merchandizing of farm commodities.

These unified activities service all groups—producers, distributors, and consumers—from the time production plans are made through the planting, harvesting, and marketing stages, and in some cases until the product reaches the consumer's table. Millions of dollars worth of agricultural products are sold each year on the basis of official estimates of crop and livestock production and the current market-news reports. With this factual information, currently and widely disseminated, the handling of agricultural products can be done on much smaller margins and with less violent price fluctuations.

The services are of such magnitude as to be impracticable for any private agency. Federal legislation requires that they be performed completely and impartially by a Federal agency. The Secretary of Agriculture has designated the Agricultural Marketing Service as the agency to perform them.

AGRICULTURAL STATISTICS

The Service collects, compiles, summarizes, and interprets a great quantity of statistical data relating to agriculture. One phase of this work, the collection of statistics of agricultural production and the estimating of acreages planted and prospective yields, has been an important activity of the Department since its inception. This activity, known throughout the Nation as the crop and livestock reporting service, had its beginning more than 75 years ago. In May 1863 approximatley 2,000 farmers in 22 Northern States were asked to make observations with regard to the number of acres sown to major crops, and as to crop prospects.

The service was established to place farmers on an equal bargaining basis with the buyers of their products. The farmer could not conceal his crops, or their promise of heavy or light yields. It was impossible for him to get out over the country to see for himself what the prospects were outside of his own relatively small locality. Furthermore, unlimited opportunity existed for misinformation on crop prospects to be circulated and accepted as the basis for trading.

Knowledge of supplies available and in prospect is necessary to the plans of both farmers and businessmen. General realization of this fact has resulted in a gradual expansion of the service until now estimates of acreage, yield, production, farm utilization, and sales are reported for more than 100 crops. The data also include figures on number of livestock, on milk and egg production and consumption, on prices paid and received by farmers, on farm wages and farm labor, and on the movement, utilization, and stocks of various farm products. The crop and livestock reporting service for many years has been regarded as the most adequate and accurate of its kind in the world.

The estimates of crop production and the number of livestock are based on returns received from more than 200,000 individual farmers, each farmer summarizing conditions on his own and neighboring farms. These farmers report voluntarily, and their combined testimony, originating in the field, gives a true picture of crop prospects.

To collect and compile this information 41 field offices are maintained. Each office is in the charge of a trained statistician who has 2 or more technical assistants and clerks. Most of the 10 million schedules or questionnaires mailed out each year are handled by the field offices. The summaries are sent to Washington, where they are reviewed by the Crop Reporting Board, and are then assembled and issued for the United States and for individual States and regions.

The production estimates are not enumerations. They are systematic attempts, based on samples or other evidence, to estimate the probable outturn of the crop. Subsequent changes in conditions are taken into account in later reports. Elaborate systems of checks and balances have been developed to insure unbiased reports.

MARKET NEWS

As a complement to the Nation-wide crop and livestock reporting system, day-to-day reports on supply-and-demand conditions at important markets the country over are disseminated for more than 100 agricultural commodities. The information is obtained at ter-

minal markets and shipping points, and from producing sections. It covers movement, market supplies, quality, and prices of livestock, meats, wool, fruits, vegetables, dairy and poultry products, grains, hay, seeds, feedstuffs, cotton and cottonseed, tobacco, rice, honey, and miscellaneous products.

For nearly 25 years this information has been made available each market day to the general public. It has become an indispensable factor in the American system of marketing. Reliable market news is now practically a necessity to everyone who produces, buys, or sells.

The basic information is collected in numerous ways—by interviews with buyers and sellers in the markets during trading hours; by telegraphic reports from railroads on shipments to and arrivals at important markets; by reports on truck arrivals at major markets; by warehousemen who report stocks in storage; by inspecting records made available by individuals and agencies engaged in buying and selling; and by numerous contacts with other sources.

To distribute the information in time to be of practical use, the Agricultural Marketing Service maintains an extensive leased-wire system. More than 7,500 miles (air line) of leased telegraph wires make it possible to send the material promptly from one market to another. Information received at any one market is quickly made available to the public by means of radio, telephone, press, and mail, and by posting on bulletin boards. It is further distributed widely through trade and farm publications, commercial and financial institutions, and other agencies. Approximately 350 radio stations now regularly broadcast current market news as compiled by the commodity reporters.

Such blanketing of the entire country has decreased the disadvantage of the individual producer and the small shipper who are in competition with the stronger commercial organizations better capable of obtaining information for themselves through far-flung trade connections. It helps to promote orderly marketing. It facilitates and equalizes distribution, discourages the dissemination of fictitious and misleading market information by unscrupulous persons, and aids economic research looking toward improved marketing methods. The recording of the day-to-day happenings in permanent form provides a continuous story for use by marketing specialists and economists in making studies and analyses of production, demand, prices, and distribution.

STANDARDIZATION

Standardization and inspection of farm products are among the principal functions of the Agricultural Marketing Service.

Standards have been established for grain, cotton, tobacco, 56 of the fruits and vegetables, and for most of the other farm products. Some of these standards are mandatory if the products are sold by grade and are shipped in interstate or foreign commerce. This is true of the standards for grain and cotton. Use of the standards for most other commodities is permissive. The chief value of uniform grades is to provide a basis for merchandising according to quality.

Standardization springs from a desire of producers, distributors, and consumers for an understandable and uniform yardstick by

which to measure gradations in quality—a gage to serve as a basis for buying and selling. Before the formulation of Federal standards about 25 years ago, and before they were made generally available, certain individual States, trade associations, and chambers of commerce had developed their own local standards. Much confusion resulted. The multiplicity of standards in use at that time, and their utter lack of uniformity caused endless misunderstanding, countless disputes, and needless loss to producers, dealers, and consumers. Specialization of production, the broadening of markets, and the greater discrimination in consumer demand intensified the problem. The resultant demand for Government standardization and for certification of quality and condition was heightened by expressed needs for more uniform price quotations at the different markets and for broader sources of credit for warehousing farm products.

In providing a common language and a basis for market quotations, farm-product standardization and inspection fulfill many needs. These services eliminate the necessity of personal inspection of the product by the buyer before the purchase is made, provide a basis for price adjustments if a lower grade is delivered than that specified, and protect the shipper against the refusal of a product that is of the specified grade. To the producer they afford a quality basis for payment, and a check on the quality of his production. They enable producer-marketing organizations to pool the products of individual producers on the basis of quality. To processors and distributors, they provide a basis for the settlement of disputes regarding quality or condition, promote a fair and honest basis for competition on contract bids, and permit the carrying of grade through to the consumer. Warehouses are provided with a basis for making loans.

GRADING AND INSPECTION

Grading and inspection form the action phase of the standardization program.

Inasmuch as the standards for farm products must cover significant gradations in quality, they are not like the minimum standards established under the Food, Drug, and Cosmetic Act. They must go further: they must differentiate the full range of commercial quality in a supply to afford a basis for trading in all qualities of the product. In evaluating a product to the grower, to the processor or manufacturer, and to the consumer, the standards must be uniform, on a Nation-wide scale. They cannot vary from region to region, or from market to market. Neither can they be changed from season to season to conform to the quality of the crop. They are uniform in reality, however, only to the extent that they are interpreted accurately and applied consistently. This necessitates centralized training and supervision of the inspectors who apply the standards.

The inspection service has become thoroughly integrated in the marketing process. It is available in many of the principal producing areas and receiving centers on fruits and vegetables, hay, beans, grain, and other products. A permissive grading service is conducted on dairy and poultry products, cotton, rice, meats, wool, and canned fruits and vegetables. In the case of meats, poultry, eggs, and butter,

programs have been developed for carrying the official grade designation through the trade channels to the consumer.

Mandatory and free inspection is provided at about 35 auction tobacco markets where at least a two-thirds majority of the voting growers who patronize the market have expressed a desire for the inspection. Free cotton classification is provided, upon request, to groups of producers organized for the improvement of their cotton.

A few years ago standardization and inspection work was limited almost entirely to facilitating the movement of commodities in wholesale channels. In recent years, however, retail and consumer organizations have taken a great interest in standardized grades. In 1938 approximately 320 million pounds of butter were officially graded. More than 85 million pounds were sold in consumer packages, each with a certificate of quality, showing that the butter was officially graded and giving the score at the time of grading. Nearly 718 million pounds of meats, mostly fresh beef, were graded, and the carcasses were so stamped that each retail cut carried the grade name for the information of consumers. Nearly 27 million pounds of dressed poultry were graded and more than 43 million pounds were inspected for condition and wholesomeness.

RESEARCH

The research work of the organization forms the basis of its service activities. Grade-standardization research centers about the development of standards for each product. It involves the determination of all the factors and attributes inherent in a product which may in any way affect its value or relative desirability. After these factors are ascertained and isolated, they need to be appraised not only individually but in relation to each other so as to arrive at their relative importance in determining the quality of the product. In making these appraisals, correct methods of evaluation need to be developed. Attention also is given to correct methods of grade identification through accurate and clearly outlined specifications expressed in simple terminology.

Numerous laboratory studies are carried on, such as spinning and ginning tests of various types and grades of cotton, milling and baking tests with grain, wool-shrinkage tests, and slaughter tests of different grades and weights of livestock from different areas of the country. Studies are constantly in progress to improve the accuracy of crop forecasts. Recent experiments include a preharvest survey of the wheat crop to make possible advance determinations of grain quality, protein content, and test weight per bushel, and a study as to the effects of soil moisture on acre yields.

ADMINISTRATION OF LAWS

The Agricultural Marketing Service is charged with the administration of the Cotton Standards Act, Cotton Futures Act, Grain Standards Act, Packers and Stockyards Act, Perishable Agricultural Commodities Act, Standard Container Acts, Produce Agency Act, Export Apple and Pear Act, Dairy Exports Act, Warehouse Act, the Tobacco Inspection Act, and the Federal Seed Act.

In addition, market service acts include the Cotton Grade and Staple Statistics Act, Tobacco Stocks and Standards Act, the Peanut Statistics Act, the Wool Standards Act, and the Farm Products Inspection Act as provided for in the annual agricultural appropriation acts.

The Cotton and Grain Standards Acts trace back nearly 25 years. As the processes of marketing became more and more complex, the demand for certain improvements increased. Additional legislation followed. Economic and practical analyses, however, preceded the formulation of the regulations under the acts entrusted to the Agricultural Marketing Service for administration. Current problems brought to light in the course of administration are closely studied.

The Perishable Agricultural Commodities Act has been in force since 1930. Serving toward the suppression of unfair and fraudulent practices in the marketing of fruits and vegetables in interstate and foreign commerce, it has become an integral part of the fruit and vegetable industry. The act requires the licensing of all commission merchants, dealers, and brokers. More than 20,000 licenses were in effect during 1939.

The purpose of the Packers and Stockyards Act, passed in 1921, is to prevent and correct irregularities and abuses that may arise in the operation of the stockyards and meat-packing industries. Unfair, unjustly discriminatory or deceptive practices are violations of the law. Millions of dollars are saved to livestock producers through the administration of this act. In 1935 the act was amended to extend regulation to the rates and practices of persons engaged in marketing live poultry in certain cities and markets. The purpose of the amendment is to prevent unfair practices and unreasonable charges which cause losses to producers and which unduly enhance prices to consumers.

The United States Warehouse Act provides for the licensing of warehouses for the storage of farm products, and the supervision of the activities of licensed warehousemen. Under the Federal Seed Act, fraudulent misbranding of seed in interstate commerce is prohibited, and imported seed is tested to determine whether it meets import requirements as to purity, germination, and weed seeds.

Recognition of the services rendered under the administration of these acts has been minimized in recent years when the Nation's chief efforts have been focused on the solution of accumulated problems resulting from the World War. Nevertheless, the service and regulatory functions have gone on with steadily increasing progress. The number of individuals and agencies served has grown tremendously during the past decade.

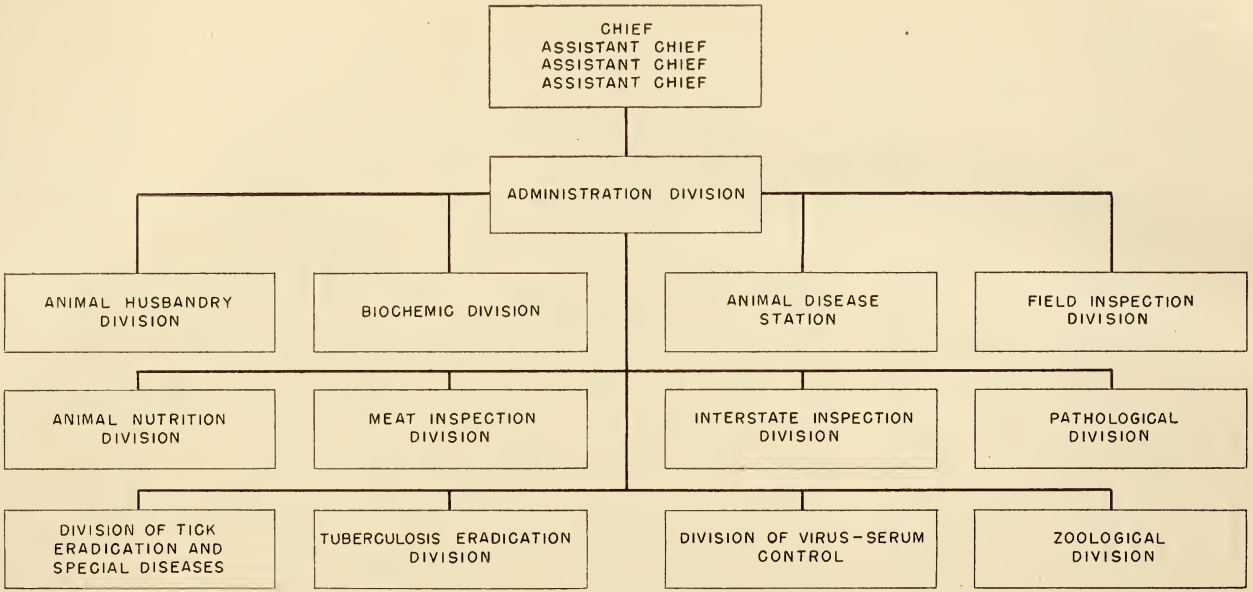
ORGANIZATION

The establishment of the Agricultural Marketing Service was contemplated in the departmental reorganization program announced October 6, 1938. In the consolidation and coordination of marketing work, then in seven agencies, the Agricultural Marketing Service was set up as one of four units responsible to the Secretary of Agriculture through a Director of Marketing and Regulatory Work. The primary purpose of the reorganization into these units under an overall Director is to integrate the types of activity in such a way that

the same concentrated attention may be given to marketing as is devoted to production and conservation, and to give the persons who deal with the marketing agencies a central point of contact.

For administrative purposes the Service is comprised of a number of divisions, which have research, service, and regulatory functions. They are: Cotton Marketing; Dairy and Poultry Products; Grain and Seed; Livestock, Meats, and Wool; Tobacco; Fruits and Vegetables; Agricultural Statistics; Administration of the United States Warehouse Act; and Administration of the Packers and Stockyards Act.

BUREAU OF ANIMAL INDUSTRY



PERSONNEL AND FIELD SERVICE
APPROXIMATELY 6,500 REGULAR EMPLOYEES; MEAT INSPECTION AT ABOUT 700 ESTABLISHMENTS IN 255 CITIES; INTERSTATE LIVESTOCK SHIPMENTS SUPERVISED; INSPECTORS AT 39 PORTS OF ENTRY AND IN ALL STATES; EXPERIMENTAL FARMS AND RESEARCH LABORATORIES AT 24 POINTS

BUREAU OF ANIMAL INDUSTRY

The activities of the Bureau of Animal Industry, established in 1884 by act of Congress, are essentially devoted to the protection and betterment of the Nation's livestock industry.

The basis of operation includes: Problems of research, involving the cause, prevention, and treatment of diseases of domestic animals; experimental projects in breeding, feeding, and management; investigations on the existence and spread of communicable diseases of animals; and the administration of livestock laws and regulations.

For the performance of these activities the Bureau has been organized on a basis of divisions which deal with major lines of work. For facility and economy of operation, administrative functions common to the entire Bureau are grouped in the office of the chief. These include principally the determination of general policies and supervision of all activities. Among such administrative functions are the preparation of estimates of expenditures, supervision of personnel; accounting, legal, editorial, and exhibit work; and related administrative work.

PRINCIPAL LINES OF WORK

The Divisions, which operate under the general supervision outlined, are engaged in the following activities:

The Animal Disease Station conducts investigations, principally of animal diseases. Its facilities are used by the various Divisions.

Animal Husbandry Division conducts investigations and experiments in breeding and management of livestock and poultry; also studies the quantity and quality of their products.

Animal Nutrition Division conducts livestock and poultry-feeding studies, investigations of livestock and poultry feeds, physiology of nutrition of livestock, and effects of storage methods on certain livestock products.

Biochemic Division conducts biochemical and bacteriological research concerning animal diseases, meat products, and disinfectants; produces tuberculin and mallein; and analyzes dips and disinfectants.

The Field Inspection Division has charge of eradication of sheep, cattle, and horse scabies, dourine, anthrax, etc.; and has supervision of import and export livestock; it supervises work related to imports of hides, skins, wool, hair, and similar products, especially with regard to danger of infection of animals by these commodities.

Meat Inspection Division conducts Federal meat inspection at slaughtering and processing establishments engaged in interstate and foreign commerce, supervises transportation of meats, and inspects imported meats.

Interstate Inspection Division conducts activities relating to administration of the 28-hour law, which provides for proper feeding,

watering, and humane handling of livestock shipments, and also the interstate transportation of livestock.

Pathological Division conducts laboratory work relating to animal diseases, their control and suppression, including bacteriological and pathological investigations of causes of disease.

Division of Tick Eradication and Special Diseases in cooperation with authorities of various Southern States, conducts work of eradicating cattle fever ticks, and carries on the field work against hog cholera; directs field forces, in various States, engaged in the investigation, suppression, and control of outbreaks of hog cholera and other infectious diseases of swine.

Tuberculosis Eradication Division conducts eradication of tuberculosis from cattle, swine, and poultry in cooperation with State authorities and individual owners; also conducts eradication of Bang's disease.

Division of Virus-Serum Control has charge of regulatory work in the enforcement of the Virus-Serum-Toxin Act aimed to insure a high quality of commercial viruses, serums, toxins, and similar products for combating animal diseases.

Zoological Division conducts laboratory and field investigations of animal parasites and studies methods of treatment of animals and of controlling parasites under farm conditions.

EXTENSIVE ACTIVITIES

In order to conduct the foregoing lines of work most satisfactorily and economically, the Bureau maintains numerous field offices, experimental farms, and laboratories. Much of the work is conducted independently, but disease-control and research studies are commonly handled in cooperation with State officials, other Bureaus of the United States Department of Agriculture, and stockmen.

To carry on these many lines of endeavor the Bureau has a personnel of approximately 6,500 employees, more than 90 percent of whom are stationed outside of Washington. These persons, selected for particular training and fitness for one or more duties, are distributed among all the States of the Union and several foreign countries.

EARLY GROWTH AND DEVELOPMENT

The first major task of the Bureau, after its creation in 1884, was the eradication of contagious pleuropneumonia which, for a number of years, had caused serious losses in livestock herds of Eastern States. This disease was entirely stamped out in 1892 and has never since regained a foothold in the United State.

The next important achievement was the establishment of a comprehensive and effective meat-inspection system which is recognized abroad as well as in the United States. The Federal Meat Inspection Act of June 30, 1906, is the cornerstone on which the present extensive, thorough, and economical meat-inspection system has been built.

Seven outbreaks of foot-and-mouth disease in domestic animals have been successfully suppressed by the Bureau of Animal Industry and cooperating States. This plague takes a heavy toll abroad. It is the object of special precautions for the protection of the livestock industry of the United States against its introduction from infected

countries. Rigid quarantine measures, together with a well-trained veterinary personnel, ready to cope with outbreaks promptly and vigorously, are the means by which this country maintains its fortunate freedom from this disease.

From time to time Congress has assigned to the Bureau added duties and responsibilities. These have included the administration of the Virus-Serum-Toxin Act of 1913, the purpose of which is to insure a high quality of veterinary biological products.

The Bureau's development has witnessed also such undertakings as the eradication of the destructive cattle ticks of the South, the control of hog cholera, and the eradication of tuberculosis from the livestock of the entire country. Enterprises such as these entailed, as the first step, the development of sound methods of procedure. Tick eradication is now more than nine-tenths completed; hog-cholera losses in recent years have been much less than formerly; tuberculosis among cattle has been reduced from more than 4 percent to about 0.4 percent; and the same disease in swine is gradually declining. A similar project in which the States are cooperating with the Bureau is directed towards the elimination of Bang's disease. This project involves the removal, from herds, of cattle reacting to the test for Bang's disease. Stock owners are required to sign an agreement specifying certain action on their part, especially along sanitary lines, in the proper handling of herds. In addition, the Bureau conducts vigorous campaigns against such parasitic pests as cattle and sheep scabies, round-worms of swine, and stomach worms of sheep.

In the field of animal husbandry, investigations have resulted in much useful information on raising domestic animals, with special reference to low costs of production, early maturity, and high quality of marketable animals and their products.

The essential results of these research and regulatory activities are presented to the public in annual reports, in scientific and popular publications, and through other channels such as exhibits and radio. Besides being an extensive source of information to the livestock industry and the public, the data are valuable also to public officials in dealing with new problems that constantly arise in connection with economic, legislative, and administrative questions.

Federal meat inspection, for instance, though established primarily to insure wholesome meat food products, has been productive also of valuable records. These show the number of animals offered for slaughter throughout the year at federally inspected establishments and the condition of such animals with respect to diseases and other ailments.

The highly gratifying results that have attended research and veterinary work in disease control are useful likewise in approaching problems yet unsolved. One of these is the need for more satisfactory methods of combating animal parasites in addition to those for which control methods are already known.

Another problem confronting the livestock and meat industries is the lack of exact knowledge of factors that influence the quality and palatability of meats. This question is highly intricate in view of present evidence that such factors include the heredity of food animals as well as the conditions under which they are raised and fattened for market. Methods of handling and cooking the meat

after animals are slaughtered are likewise involved. Hence investigations in this field necessitate extensive cooperative arrangements with specialists in several fields outside of the Bureau's organization.

Unusual climatic conditions, such as excessive rainfall or drought, commonly result in demands from the industry for assistance in meeting the new livestock problems that arise. The movement of large numbers of cattle and other animals, for instance, from flooded areas has at times complicated the conduct of tick eradication. Drought, on the other hand, has resulted in difficulties of feeding livestock, in providing adequate water supplies, and maintaining proper crop rotations. Temporary surpluses of grain, such as wheat, have resulted in numerous demands for information on the best methods of feeding this grain to different classes of livestock.

ORGANIZATION COMBINES STABILITY AND FLEXIBILITY

From the foregoing examples it is clear that the Bureau's organization and activities must be sufficiently stable to insure continuity of major projects and yet flexible enough to render practical help in emergencies and special problems that arise unexpectedly. By training key men along versatile lines and shifting employees from one division to another to meet special needs, the Bureau endeavors to meet such responsibilities. In recent outbreaks of serious diseases, for instance, adequate forces of trained veterinarians have been marshalled for active duty in the affected localities within 48 hours.

CURRENT WORK

Though printed reports of current work obviously become historical in a very short time, a brief description of several lines of such work will acquaint the reader with the manner in which the Bureau operates or obtains data with which to answer livestock questions.

A survey of the animal-disease situation has shown that of 35 important maladies that afflict livestock in various parts of the world, only 24 are known to be present in the United States. Of these, 17 are being effectively controlled or are approaching complete eradication. The remainder are under partial control or are the object of further investigation.

To prevent the spread of scabies in cattle and sheep the Bureau is cooperating with the livestock sanitary authorities in the control and eradication work. Whenever an infected herd or flock is discovered, the animals are dipped in a lime-sulphur or nicotine bath in order to destroy the scab mites. The interstate movement of affected animals is prohibited by law. Exposed animals may be shipped from one State to another after at least one dipping. Exceptions are made when shipments of exposed animals are consigned for immediate slaughter and precautions taken to prevent further infection. When inspectors at a public stockyard discover any trace of scabies in a shipment, the sanitary officials and the Federal authorities in charge of livestock-disease control in the State where the shipment originated are promptly notified. Measures are then taken to locate and treat any affected animals in that locality.

Dourine is a disease which affects horses and asses and is transmitted by the act of breeding. This disease has been practically eradicated from the United States.

At the principal livestock markets, about 50 in number, employees are stationed who make inspections of livestock received and administer the regulations. Authority to exercise such control was given to the Department of Agriculture by acts of Congress. Approximately 150 Department employees are engaged in this work. Any animals infected with, or exposed to a communicable disease must be properly treated or disposed of in such a way as to prevent the spread of the disease. It is thus possible to trace diseased shipments to their point of origin. Local authorities are thereby able to apply prompt control and eradication measures, and to prevent the further movement of diseased or exposed animals.

Another important part of this service is supervision over the cleaning and disinfection of all cars that have been used in the transportation of animals affected with communicable diseases. Normally between 10,000 and 15,000 cars are cleaned and disinfected under supervision annually either to conform with the regulations or on the request of Canadian and State officials or transportation companies.

To prevent the introduction of animal diseases into the United States importations of livestock are controlled by permits. United States quarantine officials will not issue permits for cattle, other domestic ruminants, and swine from countries where any serious diseases exist. Even when permits are issued, the animals are carefully inspected, quarantined, and sometimes tested, at the port of entry, to detect the presence of any disease. Animal byproducts, such as hides, skins, hair, and wool—also hay, straw, and manure—must be declared free from infection prior to shipment or be handled under careful restrictions after arrival at the port of entry.

In its efforts to improve the quality of livestock the Bureau investigates the breeding and raising of domestic farm animals and poultry and studies their products. Beef-cattle investigations, conducted in cooperation with State experiment stations, deal with production, wintering, and fattening in the principal cattle-producing areas.

Swine investigations cover the management of breeding stock, feeder-pig production, the effects of vitamins on growth and reproduction, and conditions that cause softness of pork. Sheep and goat investigations relate to successful methods of sheep husbandry under conditions peculiar to various sections of the country. Research work with wool and other animal fibers is conducted at Bureau stations, in cooperation with several State stations. Horse studies include the production and use of light horses, the wintering of horses, the endurance and stamina of the Morgan breed, breeding of American utility horses, and the production of saddle and draft types under range conditions.

Poultry investigations include breeding, feeding, and management for increased egg production, high fertility and hatchability, low chick mortality, and the production of eggs and poultry meat of high quality.

In cooperation with State experiment stations and other agencies, the Bureau conducts investigations and correlates the results of a

Nation-wide study of factors which influence the quality and palatability of meat. This work includes experiments to determine the effects of chilling, ripening, curing, smoking, storing, and rendering of meats. It includes a study of yields and shrinkage in slaughtering, cutting, and processing. Principles of animal breeding are formulated through the inbreeding and cross-breeding of laboratory animals of known ancestry. They are then tested through record-of-performance studies with beef and dual-purpose cattle, sheep, swine, and poultry. Grazing studies are being made in order to determine the maximum use that should be made of grass in livestock production. The Bureau also issues certificates of pure breeding for cattle, sheep, horses, swine, dogs, and cats imported for breeding purposes.

Through the aid of poultry breeders, hatchery operators, and extension workers, the Bureau of Animal Industry, under authority of Congress and with the approval of the Secretary of Agriculture, formulated and put into operation a National Poultry Improvement Plan, which became operative July 1, 1935. The plan, now in its third year of operation, has three principal objectives: (1) To improve the production and breeding qualities of poultry; (2) to reduce the losses from pullorum disease; and (3) to give authoritative recognition to breeding stock, hatching eggs, and chicks by the use of uniform terminology.

More than 1,200 hatcherymen, whose plants have a capacity of more than 52,500,000 eggs, have been participating in the program. These figures represent 13 percent of the hatcheries and nearly 17 percent of the estimated hatching capacity of the United States. Hatching eggs have been obtained by participating hatcheries from more than 30,000 flock owners who followed the provisions of the plan.

RESEARCH LABORATORIES

As a means of augmenting research work concerning major livestock and poultry problems, four regional laboratories have been established in recent years under authority of the Bankhead-Jones Act. The Bureau, in cooperation with the Office of Experiment Stations, directs a regional swine-breeding laboratory at Ames, Iowa, an animal-health laboratory at Auburn, Ala., a range-sheep breeding laboratory at Dubois, Idaho, and a regional poultry research laboratory at East Lansing, Mich.

The swine-breeding laboratory deals principally with the improvement of hogs through the application of scientific breeding methods. It is the coordinating unit and headquarters for the administration of a regional program in which about 13 Corn Belt experiment stations participate.

The animal-health laboratory undertakes the solution of major problems affecting the health of domestic animals and poultry in 13 Southern States. Projects already formulated deal with the control of Johne's disease of cattle and coccidiosis of livestock including poultry.

The sheep laboratory is devoted to the development of more uniform, adaptable, and productive strains through the application of

improved breeding methods. The laboratory coordinates a research program in which the experiment stations of 12 Western States participate.

The work of the poultry laboratory is conducted in cooperation with 25 eastern and north-central experiment stations and includes special emphasis on the improvement and viability of poultry.

CHIEF OBJECTIVES

In short, the Bureau is organized along lines that enable it to deal with both practical and technical problems with promise of success. Besides conducting the regular work, the Bureau's officials have as their main objectives: A better quality of livestock in the United States, improved and more economical feeding, exclusion of livestock diseases and pests from abroad, eradication or control of diseases and parasites causing loss within the United States, improvements in sanitation, humane treatment of livestock, a high standard of veterinary education, the solution of special problems through research and experimentation, cooperation among various branches of the industry and helpful contacts with other industries, and the distribution of information useful to livestock producers and to the public.

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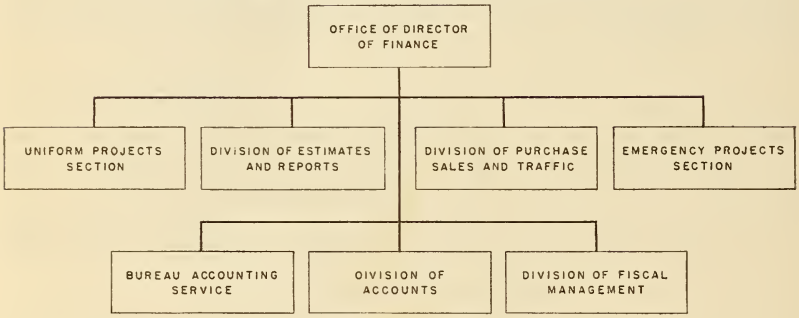
OFFICE OF BUDGET AND FINANCE


OFFICE OF DIRECTOR OF FINANCE
UNIFORM PROJECTS SECTION
DIVISION OF ESTIMATES AND REPORTS
DIVISION OF PURCHASE SALES AND TRAFFIC
EMERGENCY PROJECTS SECTION
BUREAU ACCOUNTING SERVICE
OIVISION OF ACCOUNTS
DIVISION OF FISCAL MANAGEMENT

OFFICE OF BUDGET AND FINANCE

The Office of Budget and Finance, under the supervision of the Director of Finance, who is also the budget officer of the Department, is responsible for the financial affairs of the Department. Through its own staff and through coordination of bureau financial administration, the Office directs and supervises the budgeting, accounting, purchasing, and related functions. It also conducts the business of the Department with the fiscal agencies of the Government. Formerly a part of the Office of Personnel and Business Administration, it was established on June 1, 1934, as a separate branch of the Office of the Secretary. There are five divisions and two sections in the office: The Division of Accounts; the Division of Estimates and Reports; the Division of Fiscal Management; Division of Purchase, Sales, and Traffic; the Bureau Accounting Service; the Uniform Projects Section; and the Emergency Projects Section.

The Director of Finance supervises the preparation of the annual estimates of financial needs for the operation of the Department, and the presentation of the estimates to the Bureau of the Budget and the appropriation committees of Congress. He is assisted in this work by the staff of the Division of Estimates and Reports. This Division also provides legislative information service for the Director of Finance and other Department officials, and assists the Director of Finance in clearing with the Bureau of the Budget drafts of proposed legislation, reports on pending legislation, and reports on enrolled bills.

The Uniform Projects Section, under the supervision of a committee headed by the Director of Finance, administers the uniform project system, a record of the program of work of the Department by projects, correlated with budgetary procedure, giving information under each project as to origin and brief history, objectives, methods, finances, and annual reports of accomplishments.

The Emergency Projects Section operates as executive staff of the emergency projects committee in developing and coordinating activities of the Department conducted with emergency funds.

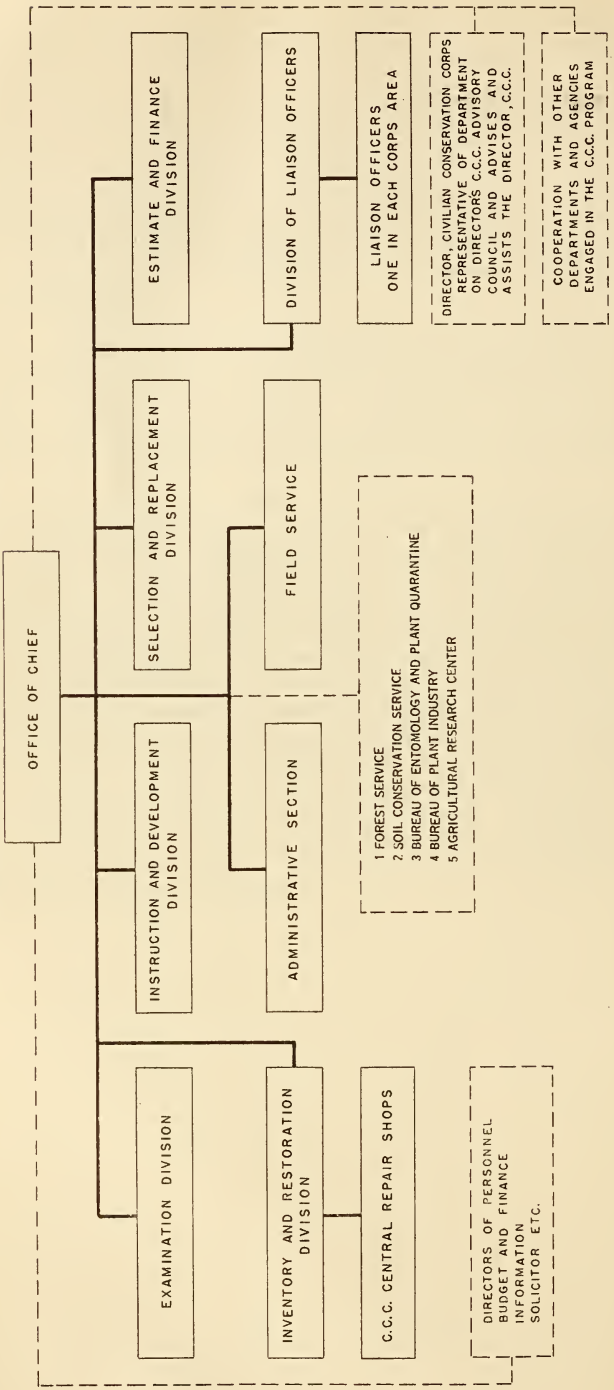
Controlling departmental accounts are maintained by the Division of Accounts to produce data required to supervise the fiscal business of the Department. The Division of Accounts serves as a central point of clearance for many types of fiscal documents passing to and from the accounting offices of the bureaus of the Department, on one hand, and such agencies as the Treasury Department, the General Accounting Office, and the Bureau of the Budget, on the other. The Division also assists the Director of Finance in the apportionment of all funds and the allotment of funds appropriated directly to the Secretary.

Facilities are being developed by the Office, especially in its recently established Fiscal Management Division, for continuing study and

appraisal of facilities for, and methods of, fiscal administration in all branches of the Department and also for continuing analysis and review of programs and policies dealing with expenditures. Periodic examinations are conducted of bureau fiscal offices to determine the adequacy and to increase the effectiveness of their organization and systems of operation. Management studies are made for the purpose of achieving more economical and effective use of funds. Programs are reviewed and analyzed from the standpoint of departmental policies and responsibilities to the end that the Secretary may be advised as to their financial aspects and that adequate departmental supervision, coordination, and facilitation in respect to these programs may be provided.

The Bureau Accounting Service provides complete administrative accounting service and maintains the necessary operating records of fiscal transactions for all units of the Office of the Secretary and for certain bureaus which do not maintain individual accounting offices. The operating accounts maintained by this Division are to be distinguished from the departmental control accounts in the Division of Accounts.

The Division of Purchase, Sales, and Traffic supervises and coordinates the procurement work of the Department, and serves as liaison office with the Procurement Division, Treasury Department, and other agencies in procurement matters. It solicits and accepts bids for the procurement of a large percentage of the Department's materials and supplies; provides supply service from its central warehouse to all Washington offices and many field stations; and performs centralized purchasing operations for several offices and bureaus. It serves as a clearing house for the interchange of surplus property between bureaus of the Department and between this and other departments. The traffic section of this Division is responsible for the routing of all shipments of equipment and supplies in a manner affording the most economical transportation. It furnishes to bureaus information as to freight and express rates and routing, prepares passenger itineraries, and otherwise assists personnel with traffic and transportation problems.


OFFICE OF C.C.C. ACTIVITIES
OFFICE OF CHIEF
ESTIMATE AND FINANCE DIVISION
DIVISION OF LIAISON OFFICERS
LIAISON OFFICERS ONE IN EACH CORPS AREA
DIRECTOR, CIVILIAN CONSERVATION CORPS REPRESENTATIVE OF DEPARTMENT ON DIRECTORS C.C.C. ADVISORY COUNCIL AND ADVISES AND ASSISTS THE DIRECTOR, C.C.C.
COOPERATION WITH OTHER DEPARTMENTS AND AGENCIES ENGAGED IN THE C.C.C. PROGRAM
SELECTION AND REPLACEMENT DIVISION
FIELD SERVICE
1 FOREST SERVICE
2 SOIL CONSERVATION SERVICE
3 BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE
4 BUREAU OF PLANT INDUSTRY
5 AGRICULTURAL RESEARCH CENTER
INSTRUCTION AND DEVELOPMENT DIVISION
ADMINISTRATIVE SECTION
EXAMINATION DIVISION
INVENTORY AND RESTORATION DIVISION
C.C.C. CENTRAL REPAIR SHOPS
DIRECTORS OF PERSONNEL BUDGET AND FINANCE INFORMATION SOLICITOR ETC.

OFFICE OF C. C. C. ACTIVITIES

The Office of C. C. C. Activities directs Civilian Conservation Corps activities engaged in by the Department of Agriculture. This Office is responsible for the execution, in the Department, of C. C. C. policies and procedures issued by the Director of the C. C. C., and for the coordination of the C. C. C. with other departmental activities. It passes on recommendations of the using bureaus in such matters as allocation of camps, funds, and equipment. The Chief of the Office represents the Department of Agriculture on the advisory council of the Director of the C. C. C. and deals with the Director, the other cooperating departments, and the public on questions arising in the operation of 1,050 camps allocated to the various Bureaus of the Department.

The Civilian Conservation Corps was until July 1, 1939, an independent agency, created in the spring of 1933 to provide employment and training for unemployed youth on conservation-work projects. Since July 1 it has been a unit in the Federal Security Administration. The Corps employs a maximum number of 300,000 enrollees, including a limited number of war veterans and, in addition, 10,000 Indians, and 5,000 residents of Alaska and the insular possessions. It was the first large-scale effort ever made by the United States Government to attack problems of idle youth and at the same time make material progress on many long-range problems dealing with the use of land resources.

The C. C. C. operates now in cooperation with, and under the technical supervision of three Government departments, of the Veterans' Administration, and of State conservation and work agencies. The Department of Labor was formerly charged with the selection of the junior enrollees, but now selection is handled by the Director's office; a similar service for war veterans is performed by the Veterans' Administration. The functions of the War Department include the assignment and transportation of enrollees to camps, the command, construction, administration, discipline, supply, sanitation, medical care, paying, education, and welfare of the men in the camps. The Office of the Chief of Finance in the War Department acts as general fiscal agent. All work projects are planned and supervised by the Departments of Agriculture and Interior. Of the 1,500 C. C. C. camps in operation, more than 1,000 are working under the general supervision of the Department of Agriculture.

The first C. C. C. camp to be established was on the George Washington National Forest, Va., under the direction of the Forest Service. The 160,000,000 acres of national forests provided work projects for the large majority of the camps at the outset of the C. C. C. in 1933. Under the act of June 28, 1937, which as amended on August 7, 1939, extends the Corps until June 30, 1940, the total number of camps was

limited to 1,500, and of this number, approximately 322 are on national-forest lands.

Also directed by the Forest Service, which handles all fiscal matters and cooperates in the planning and inspection of the work projects, are some 177 camps on State, and 102 on privately owned forest lands.

The major work of the forest camps has been in the protection of forests against fire. In addition to actual fire-fighting operations, the C. C. C. has constructed firebreaks, cleared forest areas of dangerous hazards, and added thousands of miles of truck trails and telephone lines, hundreds of lookout towers and many other physical improvements to extend and improve forest-fire protection. C. C. C. work on privately owned forest lands is limited to protection activities, and is carried on within the framework of the Clarke-McNary Act extending Federal cooperation to States and private forest-land owners in matters of fire protection. Protection of forest against insects and disease, which annually take a tremendous toll of valuable timber, is also carried on by the Corps.

Reforestation of millions of acres of forest land, denuded by fire and excess logging in the past, and now in public ownership, has been another major task of the C. C. C. under Forest Service direction. The first 5 years of the program resulted in the planting of more than 1 billion trees. Cultural operations are also carried on to promote future productive growth of timber.

Forest improvements constructed by the C. C. C. have aided forest administration and management, as well as protection. Many new structures, trails, campground facilities and the improvement of fishing conditions have expanded recreational opportunities for the benefit of the millions of visitors who annually make use of the national and State forest lands for hiking, hunting, fishing, and camping. Wildlife-conservation measures are also part of the C. C. C. forest-camp work program.

C. C. C. enrollees also aid in the development and improvement of grazing facilities in the national forests, upon which hundreds of thousands of cattle and sheep depend for summer range.

The Forest Service through its regional office at Atlanta, Ga., also supervises the work of a group of 18 camps within the Tennessee Valley Authority. The major task of these camps is the control of erosion within the Tennessee upper river system.

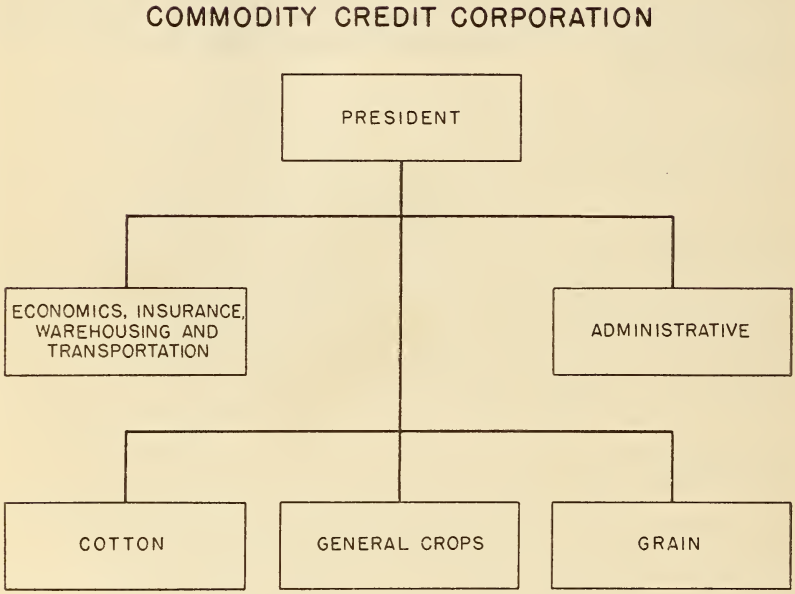
The Forest Service is the sole Federal agency in charge of C. C. C. affairs in Alaska and Puerto Rico, and handles all phases of the program except the disbursement of funds, which is handled by the War Department. The program in Alaska calls for the employment of 1,200 men, without regard to age limits, and is open to Eskimos and Indians. National-forest lands are being developed, reindeer ranges improved, airplane landing fields, shelter cabins, truck, dog, and foot trails built in and near the villages. Wolf depredations on reindeer herds are being controlled. In Puerto Rico, the C. C. C. program calls for the improvement and development of the Caribbean National Forest and insular forests by 2,400 C. C. C. men.

Approximately 354 camps are allocated to work projects under the supervision of the Soil Conservation Service, to aid in the prosecution of a national soil conservation and erosion control program.

These camps demonstrate to farmers approved methods of erosion control in areas where soil and moisture losses present acute problems. Erosion already started is being checked and future erosion prevented.

Good agricultural land losing its value because of lack of drainage, and land which had in the past been drained by systems developed through cooperative organizations or local governments, is being improved by 38 camps now under the direction of the Soil Conservation Service through the restoration and maintenance of such systems which had fallen into disrepair.

The Corps has contributed valuable work under direction of the Bureau of Animal Industry at various stations throughout the country. One camp is now in operation at the United States Range Livestock Experiment Station in Montana. One camp is aiding development of the National Arboretum in the District of Columbia, and another at the Cheyenne Horticultural Field Station in Wyoming, under the supervision of the Bureau of Plant Industry. Three camps are working under the direction of the Agricultural Research Center, at Beltsville, Md.


COMMODITY CREDIT CORPORATION
PRESIDENT
ECONOMICS, INSURANCE, WAREHOUSING AND TRANSPORTATION
ADMINISTRATIVE
COTTON
GENERAL CROPS
GRAIN

COMMODITY CREDIT CORPORATION

The Commodity Credit Corporation was created as an agency of the United States under the laws of the State of Delaware on October 17, 1933, pursuant to Executive Order No. 6340, dated October 16, 1933. Its functions as an agency of the Government have been extended from time to time, and under the act of March 4, 1939, were extended to June 30, 1941, or such earlier date as may be determined by the President.

Pursuant to the President's Reorganization Plan No. 1, which became effective July 1, 1939, Commodity Credit Corporation, its functions and activities, were transferred to the Department of Agriculture to be administered in that Department under the general direction and supervision of the Secretary of Agriculture, who, thereafter, is responsible for the coordination of its functions and activities. The Corporation, which was previously an independent agency, has been integrated into the Department of Agriculture and will continue to function as an operating unit of the Department.

The Corporation is essentially a lending institution. It makes loans principally to producers to finance the carrying and orderly marketing of agricultural commodities. All such loans are made upon the recommendation of the Secretary of Agriculture, with the approval of the President. The Agricultural Adjustment Act of 1938 directs that loans be made on cotton, corn, and wheat of not less than 52 percent, and not more than 75 percent, of parity when certain conditions as specified in the act pertain with reference to price or supply levels.

Parity, generally speaking, represents the price that would give the commodity a purchasing power to the farmer equivalent to its purchasing power in a base period which for tobacco is the 10-year period, 1919–28, and for other commodities the 5-year period, 1909–13.

Loans have been made by the Corporation on cotton, corn, wheat, tobacco, turpentine and rosin, wool and mohair, figs, dates, raisins, prunes, pecans, peanuts, and butter.

MANNER IN WHICH LOANS ARE MADE

Loans to individual producers upon the basic commodities—cotton, corn, wheat, wool—have been made under an arrangement whereby the producer may either secure the loan directly from the Corporation or from banks and other local lending agencies on forms which are provided by the Corporation under an arrangement whereby such loans as are in acceptable form will be purchased by the Corporation at face value plus accrued interest at 2½ percent. Producers' notes bear a 4-percent rate. Effective November 1, 1939, the rate allowed lending agencies was reduced to 2 percent and the rate paid by pro-

ducers reduced to 3 percent. The difference in interest accrues to the Corporation for its expense and undertaking. The major portion of all loans made have been made by banks and other local lending agencies and carried as an investment by such lending agencies for the maximum period permitted under the undertaking of the Corporation.

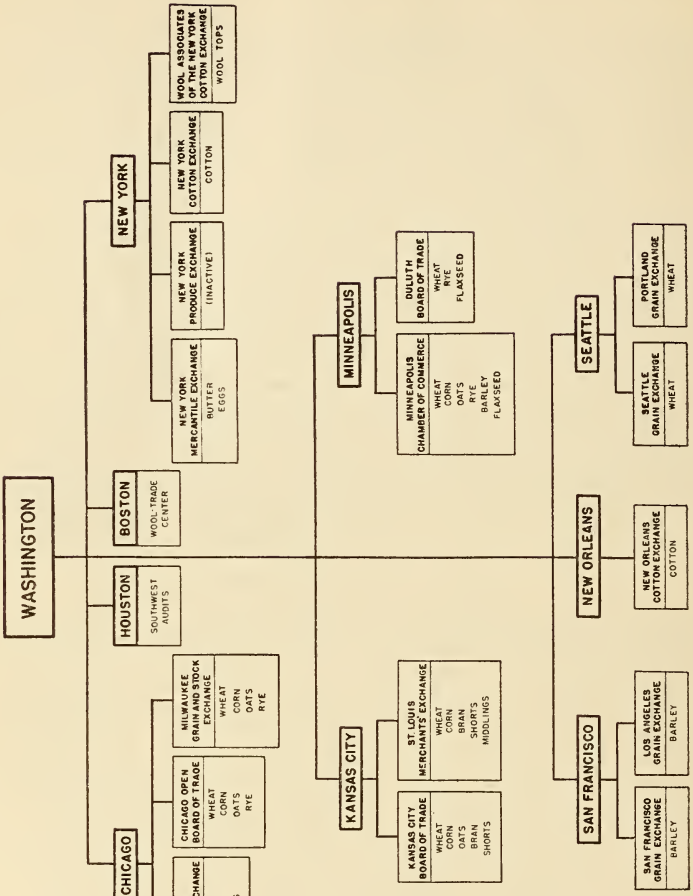
Loans are made either to individual producers or associations of producers operating on cooperative or nonprofit basis without capital or with limited capital. All loans made to individual producers have been without liability of the producer for any deficiency arising from the sale of the collateral unless fraudulent statements or misrepresentations are established. All loans required to be made by the Agricultural Adjustment Act of 1938 are on this basis.

With the exception of loans on corn, and approximately 30 percent of the loans on wheat, all loans are made upon the security of negotiable warehouse receipts issued by approved public warehouses. All loans on corn, and approximately 30 percent of the loans on wheat, are made upon the security of the commodity stored on the farm and sealed by the county agricultural conservation associations pursuant to regulations issued by the Secretary of Agriculture, the Corporation taking chattel mortgages as its security. Producers securing loans on farm-stored corn and wheat are responsible for the delivery of the proper quantity and quality but only to the extent of the difference in value between the quantity and quality of grain delivered and the quantity and quality loaned on; producers, however, are liable only for this amount out of any benefit payments then or thereafter due them by the Secretary of Agriculture.

CAPITAL AND SOURCE OF FUNDS

The Corporation has an authorized and paid-in capital of $100,000,000. Under the provisions of the act of March 8, 1938 (Public, No. 442, 75th Cong.), the Secretary of the Treasury is required to make an appraisal of all of the assets and liabilities of the Corporation, as of March 31 of each year, for the purpose of determining its net worth and, in the event such appraisal establishes a net worth of less than $100,000,000, the Secretary of the Treasury is required, on behalf of the United States, subject to appropriation of funds therefor which is authorized by the act, to restore the amount of such capital impairment. In the event the net worth of the Corporation, as of March 31 of any year, is in excess of $100,000,000, such excess is required to be deposited in the Treasury by Commodity Credit Corporation to be credited to miscellaneous receipts.

Under the act of March 4, 1939, the Corporation is authorized, with the approval of the Secretary of the Treasury, to issue, and have outstanding at any one time, bonds, notes, debentures, and other similar obligations in an aggregate amount of not exceeding $900,000,000. Such obligations, when issued pursuant to the act, are fully and unconditionally guaranteed, both as to principal and interest, by the United States, and the income therefrom is exempt from Federal, State, municipal, and local taxation (except surtaxes, estate, inheritance, and gift taxes).


COMMODITY EXCHANGE ADMINISTRATION
FIELD OFFICE AND MARKETS CONTROL
WASHINGTON
CHICAGO
CHICAGO BOARD OF TRADE
WHEAT
CORN
OATS
RYE
COTTON
CHICAGO MERCANTILE EXCHANGE
BUTTER
EGGS
POTATOES
CHICAGO OPEN BOARD OF TRADE
WHEAT
CORN
OATS
RYE
MILWAUKEE GRAIN AND STOCK EXCHANGE
WHEAT
CORN
OATS
RYE
HOUSTON
SOUTHWEST AUDITS
BOSTON
WOOL TRADE CENTER
NEW YORK
NEW YORK MERCANTILE EXCHANGE
BUTTER
EGGS
NEW YORK PRODUCE EXCHANGE
(INACTIVE)
NEW YORK COTTON EXCHANGE
COTTON
WOOL ASSOCIATES OF THE NEW YORK COTTON EXCHANGE
WOOL TOPS
KANSAS CITY
KANSAS CITY BOARD OF TRADE
WHEAT
CORN
OATS
BRAN
SHORTS
ST LOUIS MERCHANTS EXCHANGE
WHEAT
CORN
BRAN
SHORTS
MIDDLINGS
MINNEAPOLIS
MINNEAPOLIS CHAMBER OF COMMERCE
WHEAT
CORN
OATS
RYE
BARLEY
FLAXSEED
DULUTH BOARD OF TRADE
WHEAT
RYE
FLAXSEED
NEW ORLEANS
NEW ORLEANS COTTON EXCHANGE
COTTON
SAN FRANCISCO
SAN FRANCISCO GRAIN EXCHANGE
BARLEY
LOS ANGELES GRAIN EXCHANGE
BARLEY
SEATTLE
SEATTLE GRAIN EXCHANGE
WHEAT
PORTLAND GRAIN EXCHANGE
WHEAT

COMMODITY EXCHANGE ADMINISTRATION

One of the important activities of the Department is the regulation of commodity exchanges and of future trading in 14 of the principal agricultural commodities, viz, wheat, corn, cotton, rice, oats, barley, rye, flaxseed, grain sorghums, millfeeds, butter, eggs, potatoes, and wool tops. This function is performed by the Commodity Exchange Administration, one of the smaller bureaus of the Department.

Trading in commodity futures is a convenient and useful agency in the present system of marketing. It aids in the economical distribution of commodities by furnishing a form of price insurance for merchants, manufacturers, and dealers who otherwise would have to assume large market risks. This is known as hedging. The prices registered in the futures market, when not subject to manipulation or arbitrary influences, serve also as reliable standards by which to judge the relative values of varying qualities of the actual commodity under various conditions.

DEVELOPMENT OF FUTURES TRADING

Trading in futures contracts originated in Chicago shortly before the Civil War as an outgrowth of dealing in time contracts involving the sale of grain for deferred delivery. Speculation in futures contracts reached such vast proportions during the Civil War that the Chicago Board of Trade in 1865 adopted rules recognizing trading in grain futures as a distinct commercial practice. Trading in cotton futures on the New York Cotton Exchange followed in 1870. There has been a steady increase in trading in commodity futures since Civil War days. At the present time 37 commodities are the subject of futures trading in the United States. Trading in the 14 agricultural commodities under the supervision of the Commodity Exchange Administration has an approximate annual value of $25,000,000,000.

ORIGIN OF FEDERAL REGULATION

As this trade in commodity futures developed in volume and importance, an uncertainty of price fluctuations came to be associated with it in the public mind; dissatisfaction developed among producers and others which, by 1883, resulted in the introduction of a bill in the United States House of Representatives designed to "prohibit the mailing of letters and money orders relating to futures contracts." By 1921 more than 200 bills providing for the prohibition, supervision, or regulation of trading in commodity futures on organized exchanges had been introduced in Congress. In 1921 the Futures Trading Act was enacted, based upon the taxing power of Congress. But in the next year its provisions, with one exception, were declared an invalid exercise of the taxing power by the United States Supreme Court. This decision was promptly followed by the enactment of the Grain

Futures Act in 1922. This act provided a limited measure of supervision over futures trading in the principal grains. On June 15, 1936, this act was amended and extended to cover cotton, rice, butter, eggs, millfeeds, and potatoes, and its title changed to Commodity Exchange Act. On April 7, 1938, another amendment was approved adding wool tops to the list of controlled commodities.

FUNCTIONS OF THE ADMINISTRATION

The functions of the Commodity Exchange Administration may be divided into two categories: (1) Those which relate to the machinery of trading, such as the exchanges, brokers, deliverable grades, limitations on speculative transactions, and the like; and (2) those which relate to the suppression of improper practices such as prohibition of manipulation, fraud, deceit, etc.

Any commodity exchange desiring to conduct a futures market in any of the commodities named in the act must first be designated as a contract market by the Secretary of Agriculture. Before such designation can be made, commodity exchanges must meet certain conditions prescribed by law.

All futures commission merchants engaged in soliciting or accepting commodity futures orders to be executed on or subject to the rules of a contract market, and all commodity futures floor brokers engaged in executing orders for others on contract markets must register with the Secretary of Agriculture. Futures commission merchants must also file a financial statement annually with the Secretary of Agriculture.

Comphrensive information concerning trading in commodity futures is compiled, analyzed, and disseminated. One of the most important of these reports is that concerning the market position of each individual trader whose account reaches a certain designated amount, varying with the different commodities. The information presented by these reports is helpful in lessening congestion during delivery months and in preventing manipulation, and affords the Administration knowledge of developments that might otherwise lead to serious abuses.

The establishment of limits upon speculative transactions is provided for by law. The purpose of these limits is to prevent sudden or unreasonable fluctuations in price which tend to destroy the value of the futures markets.

Periodic examinations of the books and records of futures commission merchants are made to assure that customers' funds are properly handled. The law prohibits the use of such property to margin the trades of, or to extend credit to, any other person. Although violation of this provision of the act is a penal offense, it is considered essential to examine the books and records of brokers for the protection of their customers.

The second function of the Commodity Exchange Administration is the removal and prevention of such practices as manipulation, fraud, deceit, issuance of false information to influence prices, and fictitious transactions. By aiding in the maintenance of fair practice and honest dealing on the commodity exchanges, the interest of the general public is protected and the economic value of the futures trading system increased. Violation of these provisions of

the law constitutes misdemeanors, and upon conviction a person may be fined not more than $10,000 and imprisoned for not more than 1 year, or both, together with the costs of prosecution.

Reports are published from time to time by the Administration for the information of Congress and the public with respect to the data compiled from the daily reports of clearing members of the contract markets, supplemented by the continuous observation of activities on most of the larger exchanges, and by special investigations, surveys, and research.

The activities of the Commodity Exchange Administration are confined to the specialized and highly technical field of future trading and speculation in commodities. While there is, therefore, a clear-cut line of demarcation between its activities and those related to warehousing, standardization of grades, inspection services, and the like, contacts and interchange of information with certain other bureaus, departments, and independent agencies are essential. With reference to supply and demand conditions for the actual commodity, for example, the Administration relies entirely on data compiled by the Bureau of Agricultural Economics. It makes no attempt to collect or assemble basic-source material in this field. Similarly, future trading data compiled by the Administration in connection with its law-enforcement program is available and is furnished to other interested bureaus and departments according to their individual needs.

ORGANIZATION

The Commodity Exchange Administration consists of a main office in Washington and nine field offices, as shown on the chart. The field offices are located in cities where the more important commodity exchanges are situated or where deliveries are made. This arrangement enables the Administration to deal with all types of problems as they occur.

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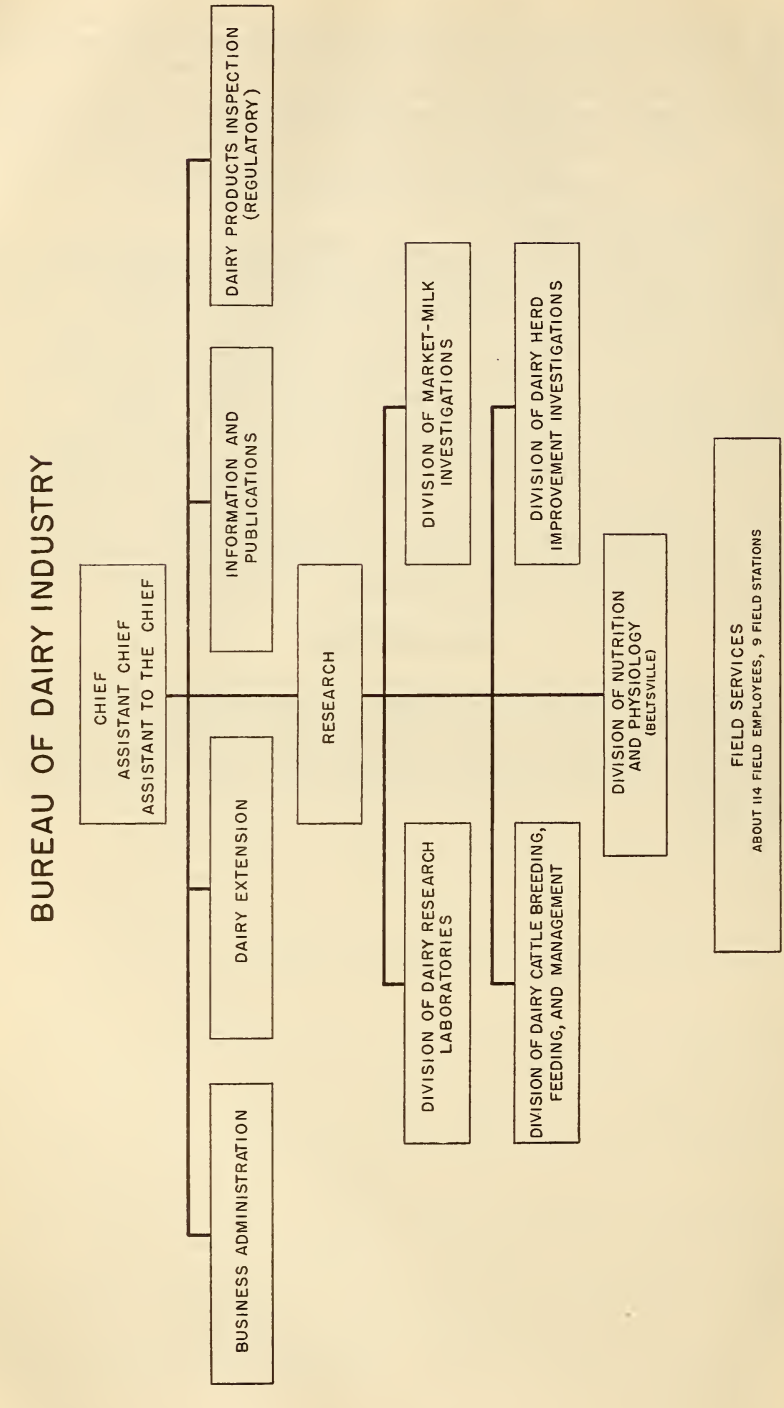
BUREAU OF DAIRY INDUSTRY
CHIEF
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ASSISTANT TO THE CHIEF
BUSINESS ADMINISTRATION
DAIRY EXTENSION
RESEARCH
INFORMATION AND PUBLICATIONS
DAIRY PRODUCTS INSPECTION (REGULATORY)
DIVISION OF DAIRY RESEARCH LABORATORIES
DIVISION OF DAIRY CATTLE BREEDING, FEEDING, AND MANAGEMENT
DIVISION OF NUTRITION AND PHYSIOLOGY (BELTSVILLE)
DIVISION OF MARKET-MILK INVESTIGATIONS
DIVISION OF DAIRY HERD IMPROVEMENT INVESTIGATIONS
FIELD SERVICES
ABOUT 114 FIELD EMPLOYEES, 9 FIELD STATIONS

BUREAU OF DAIRY INDUSTRY

The Bureau of Dairy Industry is primarily a research organization. It carries on scientific research in the genetics and breeding, management, and feeding of dairy cattle; in nutrition of dairy cattle and the physiology of milk secretion; in the manufacture of butter and cheese and other dairy products; in the utilization of milk by-products in manufactures and as human and animal food; in the economical production of high-quality milk and cream; and in the efficient operation of milk plants.

The Bureau helps the dairy industry to apply improved methods suggested by research and by investigations of commercial practice. It endeavors to develop information that will enable producers, manufacturers, and distributors of dairy products to operate with greater efficiency and profit and at the same time provide the consumer with wholesome, high-quality dairy products.

The Bureau of Dairy Industry was organized July 1, 1924. Previously (1895 to 1924) dairy research and service in the Department had been done by the Dairy Division of the Bureau of Animal Industry, which became a part of the new Bureau.

The research work of the Bureau is divided among five divisions: (1) Division of Dairy Cattle Breeding, Feeding, and Management; (2) Division of Nutrition and Physiology; (3) Division of Dairy Herd-Improvement Investigations; (4) Division of Dairy Research Laboratories; and (5) Division of Market-Milk Investigations. The Bureau is also charged with the administration of section 5 of the act of May 9, 1902, commonly known as the Oleomargarine Act. This section pertains to process or renovated butter and provides for the proper marking, branding, and labeling of the product, the sanitary inspection of all factories and premises where the product is manufactured, packed, or prepared for market, and the inspection of material and ingredients entering into its manufacture.

BREEDING, FEEDING, AND MANAGEMENT INVESTIGATIONS

Breeding, feeding, and management are the main stones in the foundation of the dairy industry, and the chief factors in its production economics. They largely determine what the consumer pays and what the producer earns.

Breeding and feeding experiments are carried on by the Division of Dairy Cattle Breeding, Feeding, and Management with dairy cattle at Beltsville, Md., and at the Bureau's seven regional field stations located at Huntley, Mont., Mandan, N. Dak., Woodward, Okla., Jeanerette, La., Columbia, S. C., Lewisburg, Tenn., and Hannibal, Mo. The field-station farms are fairly representative of the particular areas in which they are situated. The Huntley and Mandan stations are in the northern Great Plains; the Woodward is in the southern

Great Plains; the Jeanerette, in the rice and sugar region; the Columbia in the sand-hill belt of the southern Atlantic Coastal Plain; and the Lewisburg station in the midst of the general-farming region of the central South. Some of the stations are conducted in cooperation with the State colleges of agriculture.

The breeding projects at these stations are designed to develop strains that will be pure in inheritance for high production of milk and butterfat. The method involves the continuous use of sires that have demonstrated, through the performance of their daughters as compared with that of the dams of the daughters, that they can and do transmit to their offspring the genetic factors for high production. Only bulls that have proved their worth in transmitting the genetic factors for high production are used.

Some breeding work is done to compare line breeding with outbreeding, and inbreeding with outbreeding, and to test extreme outcrossing within a breed, by mating individuals of families not related. Some experimental cross-breeding is also being done.

At the Beltsville station the factors affecting the fertility of both male and female dairy cattle are studied. Experiments are also being conduced to perfect methods and practices for the artificial insemination of dairy cattle.

A comprehensive program of research into the relation between body conformation and the cow's capacity for production is under way. Cows no longer useful for other experimental purposes are slaughtered, and their internal organs are weighed and measured. The post-mortem data are studied in relation to external measurements made at regular intervals during the life of the animal. The purpose is to find out what relationship there is between the external measurements and appearance of a cow and the size of her internal organs, and what relation there is between these elements and her producing capacity.

By this research the Bureau expects to determine whether a deep and wide chest means great lung and heart capacity; whether large lungs and heart are necessary for high production; whether there is a definite relation between the size, depth and circumference of the paunch and the length and capacity of the digestive tract; and whether great digestive capacity is necessary for high production. The judging of dairy cattle is based largely on theory that may or may not be well founded. It is the purpose of this work to bring out facts upon which to base the judging of dairy cattle. Nineteen State colleges of agriculture are cooperating in this project.

Feed costs represent approximately half the total cost of milk production. If feed costs can be reduced materially, the cost of milk production will be reduced proportionately. Figures on crop-production costs indicate that the nutrients required for milk production can be produced at less cost, as a rule, in the form of roughages than in the form of grain. The Bureau's feeding experiments have shown, however, that roughages must be of high quality to be most efficient for milk production. For the best quality, roughage crops must be harvested at the proper stages of maturity and cured and stored in such manner as to retain all the nutrients that were present in the growing crop. The Bureau therefore conducts experiments to determine how the various roughage crops can be cured and stored to

preserve their nutritive value most efficiently or economically, and also to determine the most effective methods of feeding roughages. Other experiments in feeding and management include studies to determine methods of feeding and managing young stock to obtain the best growth, and methods of managing cows on pasture to maintain maximum milk yields.

NUTRITION AND PHYSIOLOGY LABORATORIES

The laboratories of the Division of Nutrition and Physiology are located at the dairy experiment farm, Beltsville, Md., where a special dairy nutrition barn is also available. In these laboratories the nutrition of dairy cattle and the physiological problems of reproduction and of lactation are studied. Research work on nutrition is conducted to determine the protein, energy, vitamins, and minerals needed in the rations of dairy cattle in order to preserve their health and optimum usefulness. The dietary requirements for normal growth, reproduction, and lactation are studied, and research on the composition of feeds is carried out to determine how these requirements may best be met. The investigations in the physiology of reproduction and milk secretion include research on the various hormones that may influence fertility, milk secretion, udder growth, etc., and their relation to these processes; the relation of diet to the formation of these hormones; and a study of the metabolic processes involved in the formation of the constituents of milk from their precursors in the blood. The aim of this work is to gain a better understanding of the various factors that affect reproduction and milk secretion in dairy cattle, in order to increase their productivity and the span of their useful life, and to reduce the losses due to irregularities in calving and to sterility.

DAIRY HERD-IMPROVEMENT INVESTIGATIONS

The Division of Dairy Herd-Improvement Investigations analyzes the data obtained in dairy herd-improvement associations to discover what actual dairy-farm practices are most profitable, and also to find outstanding animals whose inheritance can be used in improving the milk and butterfat producing ability of individual herds and of dairy cattle in general.

A dairy herd-improvement association is a cooperative organization of approximately 26 dairymen who employ a man to test their cows for milk and butterfat production, to keep a record of that production as well as of the amount of feed consumed, and in some associations to keep a record of the entire farm business. The records of production, feed, and income for each cow in the herd provide the dairy farmer a sound basis for improving the efficiency of his herd and his farm business. They provide information for efficient methods of feeding, as well as for culling the low-producing, unprofitable cows.

Through a cooperative arrangement with the State extension services, the Bureau of Dairy Industry provides the blank forms for keeping the records, and in return receives from the States for investigational purposes, copies of all data obtained in the associations. Collectively, the records are probably the largest single source of in-

formation for building up the efficiency of dairy herds in general. They are especially valuable for investigational purposes, because they are made under normal farm conditions and are obtained in such great volume. They furnish data for the study of many dairy-farm problems.

On January 1, 1939, there were more than 1,228 dairy herd-improvement associations operating in the 48 States, Puerto Rico, and Hawaii, testing more than 625,284 cows in approximately 25,949 dairy herds. Since 1906, when the first association was organized, the production of dairy herd-association cows has increased from the low level of 215 pounds of butterfat per cow per year to the relatively high level of 320 pounds. This great increase in average production has been largely the result of intelligent culling and proper feeding and management of the herds. Increasing the production of the herd by culling and feeding has definite limitations, and genuine herd improvement must come through a breeding program that will develop the inheritance of the herd for high-producing ability. More attention, therefore, has been directed in recent years toward the use of the production records of association cows to prove sires and to locate those families of dairy cattle that possess the ability to transmit high milk- and butterfat-producing ability to their offspring. The nonregistered animals in these associations are being eartagged to establish their identity; and complete identification records of all association animals, both registered and nonregistered, are filed in a permanent-record system located in the Bureau of Dairy Industry. All production records are also filed as they are reported, with the result that data are accumulating on individual animals and families in routine manner. Lists showing the sires proved and their performance are issued as information is accumulated on the thousands of sires used in association herds.

In a broad way the 24,000 association herds, consisting of approximately 550,000 cows on test, as well as the sires and young stock, aggregating possibly three-quarters of a million cattle in all, form a national breeding herd that supply improved breeding stock to the national dairy herd of 25,000,000 dairy cows. The influence of the superior animals in dairy herd-improvement associations, which average 320 pounds of butterfat production per cow per year, is being gradually disseminated throughout the dairy-cow population of the Nation, which has an average butterfat production of only 170 pounds per cow per year.

DAIRY RESEARCH LABORATORIES

The general objective of the work of the Division of Dairy Research Laboratories is to discover ways to improve the quality of domestic dairy products; to lessen costs of dairy products through improved methods of handling and manufacturing, to help develop new processes and new products which will increase the market outlet for dairy products, and to perfect and demonstrate methods of making dairy products that are now imported.

In the preparation of nearly all milk products the manufacturer is concerned with bacteria, either through the necessity of suppressing their activity to prevent spoilage or promoting it to produce definite flavors or physical effects. Consequently there are included

in the program of the laboratory some fundamental investigations which have no obvious application to industrial problems. For example, these include such questions as the mutual effects, sometimes favorable and sometimes antagonistic, of different bacterial cultures when grown together; the conditions that control the formation and germination, and the destruction by chemical and physical agents, of the resistant spores of certain species of bacteria. For similar reasons fundamental investigations on the chemistry of milk are included. Extensive studies are also made of the composition of milk fat, with particular reference to the minor constituents.

In the deterioration of butter and nearly all milk products, abnormal flavors, caused by an oxidation of the fat, are an important factor. Therefore, the chemical changes that take place when fats are oxidized are studied, as well as the conditions that accelerate or retard these oxidations when milk or milk products are manufactured, transported, and stored. In the manufacture of condensed and evaporated milk, milk powder, and other products in which the relations of the various constituents of milk are changed, the question of stability, especially to heat, is of major importance. Hence the factors which tend to maintain or disturb the stability of the solutions, suspensions, and emulsions in which the constituents of milk are held, are extensively examined. From the data obtained in this way new methods and improved technique for the established commercial practices are developed.

In the manufacture of the major dairy products, particularly butter and cheese, large quantities of byproducts in the form of skim milk, buttermilk, and whey are produced. The byproducts produced annually contain over 5 billion pounds of milk solids or more than one-third of the solids in all the milk produced. These solids are entirely suitable for food but on account of lack of palatability, perishability, or in some cases dilution, they have a low commercial value. One of the important lines of research is the development of new methods by which these byproducts or their individual constituents can be converted into valuable food products or through fermentation or chemical treatment into materials that have industrial applications.

A method of concentrating whey so that it may be shipped and held has been developed, and many ways of using this product in foods of various kinds have been found. This investigation is being continued, and new applications of dairy products in confectionery, soups, fruit whips, cake, and bread are being worked out.

The various constituents of skim milk and whey may be isolated and new uses found for them in foods or in industrial products. A method in course of development separates from whey the lactose (milk sugar) in condition for pharmaceutical purposes, the soluble proteins with the whipping properties unchanged, and a residue containing the valuable vitamins in a concentrated form.

Casein is one of the major constituents of skim milk, and the development of new industrial products from casein would increase the demand for skim milk. The Bureau has recently developed a process for making a textile fiber from casein that resembles wool in many respects.

Lactose is converted by fermentation into lactic acid, and work is in progress on means of purifying the acid and converting it into

esters, resins, and other products used as solvents, plastics, and lacquers.

Commercial ice-cream making has become an important branch of the dairy industry, and in its rapid growth many problems have arisen. The laboratories are attempting to work out the physical changes that take place in the freezing of the complicated ice-cream mix, to determine the factors that control the texture and flavor of ice cream, and to find ways of increasing the amount of milk solids in ice cream without impairing its quality.

About 6 percent of the milk produced in this country is utilized in the manufacture of cheese, of which about 600,000,000 pounds are made annually. In addition to the domestic cheese about 65,000,000 pounds are imported each year from foreign countries. An important objective of the Bureau's cheese work is so to improve the quality of the domestic cheese that the consumption will be increased and losses from defective cheese will be reduced. This is supplemented by efforts to develop methods of making the foreign types of cheese under domestic conditions. The bacteriological and chemical factors involved in producing the required flavors and physical characteristics in different varieties of cheese are studied, so that methods of scientifically controlling the manufacturing methods may be worked out. The particular types of bacteria or molds concerned in the ripening of different types of cheese have been determined, and cheese makers have been shown how they may carry these organisms in the factories as starters for cheese making.

One of the retarding factors in promoting a greater consumption of cheese is the inconvenient, wasteful, and unattractive package in which Cheddar, the most important domestic cheese, is marketed. A new method, by which the curd from the press can be ripened and marketed in a sealed container without waste from rind, loss from evaporation of water, or molding, has been perfected. This is also being applied to Swiss cheese, which must be ripened in a large loaf but may be cut into proper sizes, sliced ready for sandwiches, and sealed in cans to be stored until used.

The facilities for this research work include well-equipped chemical and bacteriological laboratories in Washington, with complete equipment for manufacturing all dairy products and byproducts on a small scale. At the Beltsville farm, equipment is available for manufacturing work on a larger scale. An automobile trailer, equipped for all ordinary bacteriological and chemical work, is available for investigational work in the cheese factories and other dairy-manufacturing establishments.

In addition to the usual methods of disseminating research results, an organization for demonstrating and introducing new methods and new products in dairy-manufacturing establishments is maintained in cooperation with State organizations. Fieldmen are stationed in the manufacturing districts or are sent out from Washington. In each of the two larger Swiss-cheese districts (Ohio and Wisconsin) experienced men with automobile laboratories are stationed permanently, assisting and instructing the cheese makers in the improvement of the milk supply, propagation and use of bacterial starters, and control of acid development, composition, and other factors that influence the quality of the cheese.

MARKET-MILK INVESTIGATIONS

The Bureau does research and service work to improve the quality of dairy products, as well as to increase production per cow. Dairy producers as a group could increase their aggregate income by millions of dollars a year by taking the precautions necessary to attain and maintain high quality in the product. Sour or off-flavored milk and cream usually cannot be marketed as advantageously as high-quality sweet products. If the dairyman who offers such products finds a market, the price he gets is low compared with what he could get if he offered high-quality products. The consumption of dairy products might be greatly increased. The per capita consumption of milk in this country is much lower than in a number of other civilized nations. Raising still higher the general level of quality of dairy products is urged by the Bureau as a powerful means of stimulating consumption.

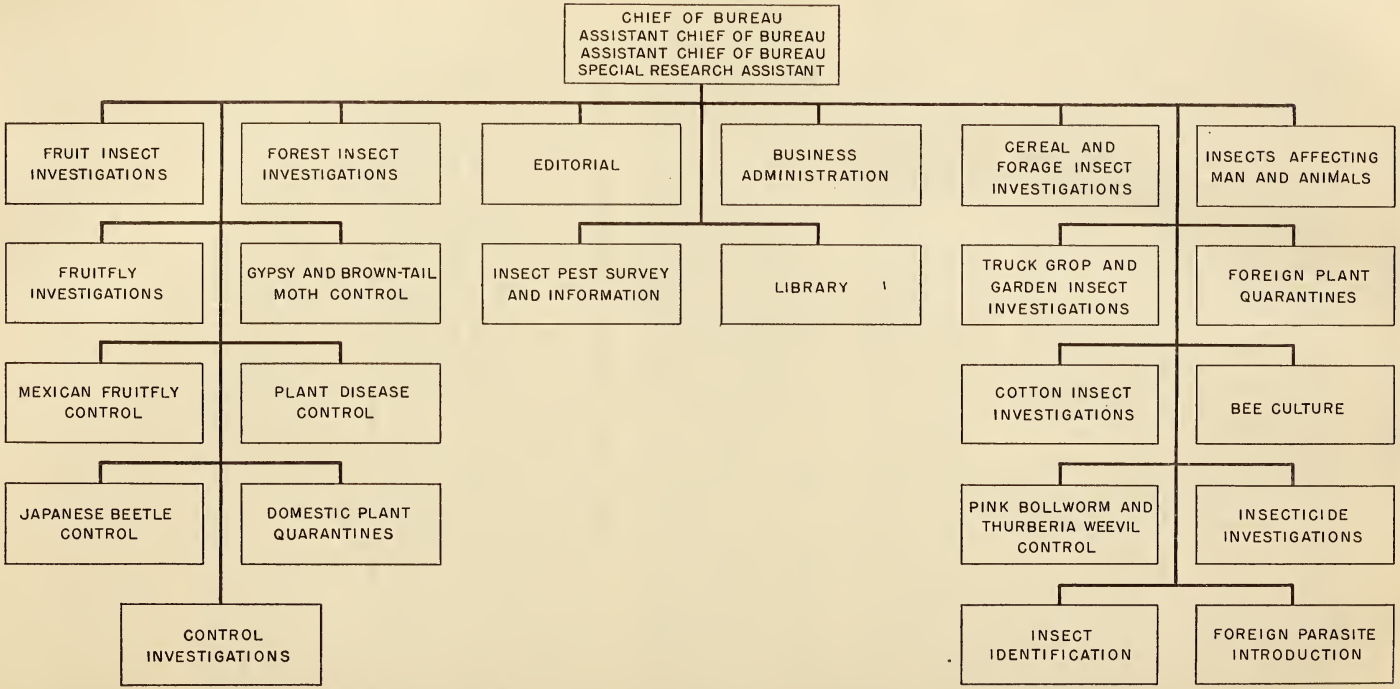
The Bureau carries on dairy-sanitation investigations, to develop better methods for handling fluid milk and cream. Its quality-improvement work relates to the sanitary treatment of utensils, the care of milking equipment, the cooling of milk and cream to prevent the growth of bacteria in the product, the care of milk and cream in transit, efficiency in pasteurization, and sanitation in city milk plants.

The problems of the city milk distributor are studied to develop means of reducing the cost of processing and delivering milk. Very few foodstuffs are delivered to the consumer as quickly, and in as clean a manner, as milk and cream, but there is still room for improvement. Important studies are under way regarding the creaming property of milk, the whipping quality of cream, the viscosity of cream, and the factors which affect the flavor and odor of milk.

EXTENSION AND INFORMATIONAL WORK

The full value of the Bureau's work is realized only when the results are applied in farm and commercial practice. In order that research findings may be applied effectively and without delay, the Bureau and the Office of Cooperative Extension Work of the Department have dairy subject matter extension specialists in the four main geographic regions of the country. These specialists, in cooperation with the State directors of extension work and with State dairy extension specialists all over the country, develop practical ways and means for getting research results into practice. Through the Office of Information of the Department, the Bureau issues information to the dairy industry and to the general public in Government publications, articles in the press, and radio broadcasts; and through the Extension Service dairy information is disseminated by means of exhibits and motion pictures.

BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE



BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE

One of the earliest activities connected with improving conditions of agricultural production was developing methods of insect control. The need of protecting crops from damages caused by insect pests has long been recognized. The growth of economic entomology in the United States has been phenomenal and largely led by the activities of the Federal Government. Federal appropriations for work on insects have increased from an annual budget in 1878 of $5,000, to approximately $6,199,809 for the fiscal year 1940. Also, $5,450,000 was provided for work to combat incipient and emergency outbreaks of plant pests and more than $5,000,000 was allotted from emergency funds for work to control plant pests.

The forerunner of the present Bureau of Entomology and Plant Quarantine was the appointment of an entomologist in 1854 in the Division of Agriculture of the Patent Office to collect statistics and other information on seeds, fruits, and insects in the United States. The great outbreaks of migratory locusts in the West in 1874, 1875, and 1876 led to the appointment by Congress in 1877 of a special entomological commission to study this pest. In 1883 the Division of Entomology was established with a personnel of three or four men. On July 1, 1934, the Bureau of Entomology and the Bureau of Plant Quarantine were merged, and the Insecticide Division of the former Bureau of Chemistry and Soils (now the Bureau of Agricultural Chemistry and Engineering) was transferred to the new Bureau. At the same time the Division of Plant Disease Control, including work on citrus canker, phony peach disease, peach mosaic, blister rust control, and barberry eradication, was transferred from the Bureau of Plant Industry to the new Bureau. The Bureau has a personnel of 3,417 employees, including approximately 790 trained specialists. This merger involved considerable reorganization of the work formerly carried on by the separate bureaus. Four control units were set up to direct projects on (1) Mexican fruitfly, (2) gypsy moth and brown-tail moth, (3) pink bollworm and Thurberia weevil, and (4) Japanese beetle, European corn borer, and the Dutch elm disease. A fifth unit was introduced to direct work on white pine blister rust and black stem rust of wheat. New research units were established to direct the investigational work on fruitflies, control, and foreign parasite introduction. A division was also formed to administer insect pest survey and informational activities.

Most of the problems of insect control have been brought about by the rapid expansion of agriculture. As new lands were brought under cultivation many native insects turned their attention to cultivated crops, on which they developed in enormous numbers. On the other hand, many of our worst insect pests have been brought to our shores from foreign countries. Some of them came in with the early settlers; others followed in rather more or less regular succession until

comparatively recently (1912), when legislation was enacted which authorized the promulgation of quarantines regulating the entry of plants and plant products. The country has had a succession of important insect problems, beginning with the ravages of the Rocky Mountain locust during the seventies. The Colorado potato beetle became troublesome about the same time, and the cotton caterpillar in the South a few years later. Damage was done by the codling moth to apples, by the hessian fly and the Angoumois grain moth to the wheat crop, and by the chinch bug to the corn crop. The advent of the San Jose scale into eastern orchards about 1890 aroused grave fears for the welfare of our fruit-growing industry. This insect caused many of the States to pass legislation to restrict its spread. In 1938, by joint resolution of the Seventy-fifth Congress, funds were made available for the control of incipient or emergency outbreaks of insect pests or plant diseases, in cooperation with the several States.

POPULAR INTEREST IN INSECTS INCREASED

Notably increased prominence was given to entomological work when the cotton boll weevil invaded Texas from Mexico about 1892. Entomology had been stimulated somewhat earlier by the introduction from Europe of the gypsy and brown-tail moths into Massachusetts. The discovery during the late nineties of the transmission of yellow fever by mosquitoes was an additional incentive to entomological effort. More recently certain introduced pests, including the alfalfa weevil, the European corn borer, the Japanese beetle, the oriental fruit moth, the pink bollworm, the Mediterranean fruitfly, and the white-fringed beetle, have focused public attention increasingly on insects in their relation to man's welfare. The great value of the crops menaced and the large appropriations made for the control of certain pests have impressed the significance of entomological work not only on farmers but also on the general public. With the rapid development of agriculture there has been a correspondingly larger opportunity for insect damage, and at present it is conservatively estimated that the losses due to insects are not less than $3,000,000,000 per year. Although undoubtedly insect damage has increased, the demand on the part of the public for produce free from insect infestation and a full realization of the losses that insects are causing has played a very important part in stimulating interest in insect work.

RESEARCH WORK OF THE BUREAU

The research work of the Bureau of Entomology and Plant Quarantine includes the study of insects injurious to crops and crop products, development of methods for their eradication or control, and the study of those insects affecting the health of man and livestock, including those infesting human habitations or injurious to our industries. It also involves the study of insects which may be beneficial, both those forming the basis of certain industries, as the honeybee, and those which prey on others and thus aid in controlling pests which attack cultivated crops or forests. The investigations of the Bureau are carried on both independently and in cooperation with other branches of the Federal Government or with State, county,

and municipal agencies, as well as with agricultural and other organizations and individuals. Certain phases of the work are also carried on in cooperation with the specialists of foreign governments. The research work is carried out largely at field stations or laboratories. The number of these stations varies somewhat from year to year. There are at present about 150 laboratories, including those at the Agricultural Research Center at Beltsville, Md., some of them semipermanent and equipped for thorough-going research. The aim is to build up a corps of entomologists capable of furnishing information on all insects that affect mankind. The investigational work of the Bureau is carried out in the following 12 divisions: Fruit Insect Investigations; Fruitfly Investigations; Truck Crop and Garden Insect Investigations; Cereal and Forage Insect Investigations; Cotton Insect Investigations; Forest Insect Investigations; Insects Affecting Man and Animals; Control Investigations; Insecticide Investigations; Bee Culture; Foreign Parasite Introduction; and Insect Identification.

FRUIT INSECT INVESTIGATIONS

The Division of Fruit Insect Investigations conducts research, on the insects affecting fruit and nut trees, grapes, and certain other small fruits. Some of the more important insects now under investigation are the codling moth, pear thrips, oriental fruit moth, plum curculio, grape berry moth, California red scale, citrus rust mite, and citrus thrips. The work includes investigations on insects attacking dried fruits, especially the raisin moth, the dried-fruit beetle, and similar insects. This Division is also responsible for research work on the Japanese and Asiatic beetles, serious pests which reached this country about 20 years ago and which attack a wide variety of fruits and plants. The most important and widely distributed of these pests from the Orient is the Japanese beetle.

Special efforts are now being made to develop an effective stomach poison for the control of the codling moth and other fruit insects that will be less objectionable from the standpoint of human health than lead arsenate, and to develop more fully control methods that do not involve the use of poisonous sprays, such as orchard sanitation and the use of bait traps. With the oriental fruit moth, which is not readily controllable by the use of standard insecticides, emphasis is being placed on control by natural enemies, including a great many parasites that have been brought in from foreign countries. The work with the California red scale relates particularly to the resistance to fumigation with hydrocyanic acid gas. The research on dried-fruit insects is directed toward the prevention of infestation on the ranch, in order that the fruit may move into the warehouses free from insect infestation. Investigations of the Japanese and Asiatic beetles are intended to develop methods whereby the individual home owner or grower can protect his own property from injury by these pests; also, in connection with the regulatory activities of the Bureau, to develop control methods that will permit the movement of agricultural products in commerce and yet eliminate the danger of the long-distance spread of the infestation to new localities.

FRUITFLY INVESTIGATIONS

The Division devoted to fruitfly investigations conducts research on these insects in Mexico, Hawaii, Puerto Rico, and the Canal Zone, cooperating with the experiment stations in Hawaii and Puerto Rico and with the Mexican Department of Agriculture. The work in Mexico is coordinated with the control work on the Mexican fruitfly in Texas. Biological and control investigations are supplemented by the development of processes for the sterilization of products to permit movement in the channels of trade.

TRUCK CROP AND GARDEN INSECTS

The Division of Truck Crop and Garden Insect Investigations is concerned primarily with the study of insects and related forms which are injurious to truck and garden crops, including vegetables, such small fruits as strawberries, raspberries, and blackberries, sugar beets, tobacco in the field and in storage, flowering plants, bulbous plants, ornamentals, and mushrooms, and in the development of methods of controlling these pests. Investigations of insects attacking vegetables include cabbage worms, pepper weevil, lettuce insects, celery insects, Mexican bean beetle, lima bean pod borer, wireworms, turnip aphid, sweetpotato weevil, pea weevil, pea aphid, mole crickets, European earwig, tomato pinworm, and tomato fruitworm. The insects attacking berries included in the investigations are the strawberry weevil, strawberry root aphid, raspberry fruitworm, and blackberry mite. The investigations of insects affecting sugar beets are confined almost exclusively to the sugar beet leafhopper in its capacity as the vector of the curly top disease.

Included among the insects affecting tobacco are hornworms, budworms, and flea beetles, cutworms, and wireworms in tobacco grown in the field, and the cigarette beetle and the tobacco moth infesting tobacco in storage. On flowering plants and ornamentals the principal pests receiving attention are various species of thrips, aphids, white flies, red spider mites, tarsonemid mites, mealybugs, scales, bulb flies, leaf miners, the bulb nematode, and insect vectors of mosaic diseases. The general mushroom pests include several species of flies, mites, springtails, and sowbugs. The investigations on these and numerous other pests of the crops enumerated render it possible to recommend effective methods of control. Some of the outstanding accomplishments are the recent development of the treatment of various vegetables, small fruits, and tobacco with organic insecticides, such as derries, cube, or pyrethrum, which are effective against several species of insects and which do not leave a harmful residue on the market product. Effective cultural methods have been developed for the control of wireworms, particularly under irrigated conditions. Recent experiments have indicated that a sweetened tartanemetic spray is effective against the gladiolus thrips without causing the foliage burning which has heretofore rendered the treatment of infested growing plants a hazardous procedure. Improved heat treatments have been developed for use against various species of bulb flies, the bulb nematode, mites, and thrips infesting flowering bulbs.

CEREAL AND FORAGE INSECTS

The Division of Cereal and Forage Insect Investigations is concerned with studies and experiments leading to the development of

effective and economical means of controlling the many kinds of insects that affect cereal and forage crops, including sugarcane. The activities include, in addition to the actual insect studies, experimentation leading to control by cultural practices, the use of machinery, and other methods. The investigational work on the European corn borer and the sugarcane borer is carried on in this Division. In addition to carrying out studies on the control of these pests by artificial or cultural methods, an effort has been made to reduce their numbers by importing their natural enemies from foreign countries. This Division is also concerned with investigations on grasshoppers, the alfalfa weevil, and the hessian fly. It has recently devised changes in the poisoned-bran bait used in the control of grasshoppers, greatly reducing its cost and increasing the scope of large-scale control campaigns.

COTTON INSECTS

The Division of Cotton Insect Investigations is concerned with the development of effective and economical control measures for insect pests of cotton that enable the growers to increase the yield, improve the quality, and reduce the cost of production. Among the important cotton insects being studied are the cotton boll weevil, pink bollworm, cotton flea hopper, bollworm, cotton aphid, root aphids, tarnished-plant bug, and thrips. Investigations conducted by members of this Division have demonstrated the effectiveness of cultural practices and of the use of calcium arsenate in boll weevil control. They have discovered that the cotton flea hopper, tarnished plant bug, and other sucking bugs may be controlled by dusting with mixtures of sulfur and arsenical poisons. Progress has been made in developing cultural practices for the control of the pink bollworm. Studies are being conducted on parasites of cotton insects and efforts are being made to establish several introduced species of pink bollworm parasites. The investigations are conducted in cooperation with State agencies in South Carolina, Georgia, Florida, Mississippi, Louisiana, Texas, and Arizona.

FOREST AND SHADE TREE INSECTS

The Division of Forest Insect Investigations is concerned with research on insects destructive to forests, shade trees, and crude forest products, and the development of satisfactory control methods. The principal groups of native insects being studied are bark beetles, defoliators, forest-nursery insects, and termites. Most attention has been given to the tree-killing bark beetles of the genus *Dendroctonus*, which have destroyed large areas of valuable pine timber in the West and in the Southeast. Recently a method has been developed for injecting chemicals into trees killed by bark beetles to poison the beetle broods, and a similar method for treating freshly cut posts and poles to prevent subsequent insect attack. The investigations also include introduced pests, such as the gypsy moth, satin moth, European pine shoot moth, and European spruce sawfly, and the possibilities of control by artificial, silvicultural, or natural means, the latter involving the establishment and colonization of natural insect enemies from foreign countries. The importance of insects in transmitting certain tree diseases is a more recent line of investiga-

tion, conducted in cooperation with forest pathologists. Two elm bark beetles have been found to be the principal vectors of the Dutch elm disease in the East. The Division also gives technical direction to large insect-control campaigns being conducted by Federal and State agencies and private owners on timberlands.

INSECTS AFFECTING MAN AND ANIMALS

Investigations of the many insects and related forms which attack man and animals are carried on in the Division of Insects Affecting Man and Animals. These investigations are concerned with such pests as mosquitos, sand flies, ticks, and eye gnats affecting man, and screwworms, cattle grubs, horse bots, horn flies, and lice affecting animals. In connection with studies on insects in relation to man, investigations on the beneficial use of blowfly maggots in medicine have developed, in cooperation with the medical profession, two chemicals, namely, allantoin and urea. These materials are present in the secretions of blowfly maggots and are largely responsible for the healing effects produced by them in suppurating wounds. These chemicals are now being manufactured synthetically and have been widely adopted by the medical profession. In the work on livestock pests, screwworms, cattle grubs, horse bots, and the development of insecticidal and repellant sprays for protecting animals against insect attack receive particular attention.

Methods for protecting wildlife against insect parasites and predators are being studied. The Division is responsible also for investigations on insects such as clothes moths and carpet beetles, which attack fabrics; insects such as ants, cockroaches, and cheese skippers, which attack food materials in the household, in packaged goods in warehouses, and in stores; insects that infest hides and skins; and insects that damage books. During the course of these investigations many satisfactory control measures have been developed, and a great deal of work of a service nature in informing the public of these measures is carried on. In the work on animal parasites the Division cooperates with the Bureau of Animal Industry, the Food and Drug Administration, State agricultural experiment stations, and individual livestock owners in such investigations as determinations of insect vectors of disease, the development of methods of treating animals for the control of parasites, and the practical application of methods of insect control as such methods are developed. Investigations on insects affecting man have been carried on in cooperation with the Bureau of Biological Survey, especially with reference to studying the relationship of mosquito-control methods and wildlife conservation, and the possibility of controlling disease-transmitting ticks by the destruction of rodent hosts. In the studies on surgical maggots the Division had cooperation from the Bureau of Agricultural Chemistry and Engineering, Government and private hospitals, and leading surgeons. The Division has benefited by long cooperation with the Army and Navy Quartermasters, St. Elizabeth's Hospital, the Archives, the Federal Trade Commission, and other governmental agencies, as well as numerous commercial concerns and libraries, in its studies of insects affecting fabrics, foods, books, hides, and skins.

CONTROL INVESTIGATIONS

The work carried on in the Division of Control Investigations deals with problems having an intimate relation to much of the research, control, and quarantine work of the Bureau. Frequently this work cuts across divisional lines, in which case it is closely coordinated with that done by other divisions of the Bureau. Included in this work are investigations on the commercial application of methods for the sterilization or disinfestation of products moving under quarantine regulation, and the standardization of methods of disinfestation required by these quarantines. Studies are also under way on the development of insecticides, or the improvement of old insecticides, and laboratory tests on compounds that may be valuable for insecticidal treatment. In the course of a year thousands of compounds or preparations are tested to determine their insecticidal value. The physiology of insects is studied in order to develop basic information necessary to understand the action of the various toxic substances on insects and to be able to proceed more intelligently in the development of insecticides. Equipment for the application of insecticides—liquid, gaseous, and solid—is devised and tested, the development of improvements for such equipment being part of the work of the Division. The activities include general research work of interest to the Bureau as a whole, and are not confined to specific insect pests or particular crop plants.

INSECTICIDE INVESTIGATIONS

One of the functions of the Division of Insecticide Investigations is to discover or invent new compounds and combinations of compounds that are more effective, cheaper, less hazardous to operators, and safer to apply to fruits and vegetables than insecticides now in use. Special attention is directed to the development of insecticides that can be substituted for the objectionable lead arsenate and other arsenicals that are now widely used for controlling many insect pests of foodstuffs. Research is also conducted with a view to finding fungicides superior to those in common use. It is also one of the functions of the Division to improve the insecticides in present use by the farmer, the orchardist, and the truck grower, as well as those used in the household and on pets and domestic animals, and to study the physical and chemical properties of these insecticides so that they may be employed more effectively and manufactured more cheaply. The Division also studies wetting agents, emulsifiers, adhesives, and diluents used with insecticides and fungicides. This Division is also concerned with the development of washing solutions and methods of washing for the removal of harmful spray residues from fruits and vegetables that have been treated with insecticides.

BEE CULTURE

The Division of Bee Culture conducts studies on the habits and management of bees to make their production of honey and wax more profitable, to facilitate their use in the pollination of fruit, vegetable, and forage crops, and to improve methods used in the package-bee and queen-rearing industries. Headquarters for this work are at Beltsville, Md., and investigations concerning particular

regions are carried on at field laboratories. The work concerns not only the biological nature of the bee as expressed in its various responses to natural and artificial conditions, but also problems of apiary management and the care of honey from the time it leaves the hive until it is finally prepared for the market. Other activities include maintaining a bee disease diagnosis service and administering the regulations restricting the importation of honeybees into the United States under act of Congress of 1922.

FOREIGN PARASITE INTRODUCTION

The Division of Foreign Parasite Introduction is engaged primarily in the importation from foreign countries of natural enemies of a considerable number of crop pests. This work involves extensive surveys in the countries of origin, studies to determine the status of the parasites and predators found, and, finally, large-scale field collections or rearings for shipment. The Division is responsible for the handling, under quarantine, of the material imported, following which the parasites are transmitted to the divisions concerned for further rearing and colonization. Special investigations on the effect of various chemical and other control measures on the population of parasites and predators are being conducted to obtain greater effectiveness from these parasites and predators through changes in present control methods. The Division is also concerned with the correlation of the biological control work of the various divisions with that of the Bureau and State agencies.

INSECT IDENTIFICATION

The Division of Insect Identification is engaged in the identification, classification, and description of insects, both in the adult and immature stages. Accurate and definite determination of the insects concerned is the first step in any entomological investigation and in the enforcement of plant and animal quarantines for the exclusion of new insect pests. The work of this unit, involving exact and continuing research, is therefore of a fundamental nature and essential to all other activities of the Bureau.

REGULATORY AND CONTROL WORK

It has been estimated that 2 hours of every day's work on the farm or in the garden and orchard is required to produce the food eaten by the many plant pests introduced from foreign countries. It is one of the functions of the Bureau to enforce various regulatory measures promulgated to prevent the further introduction of these pests and to cooperate with the States in the enforcement of eradication or suppression measures with respect to pests which have been introduced but have not become widely disseminated. To accomplish these objects, various laws have been enacted providing for the restriction or the regulation of movement of products likely to carry pests. Four acts of Congress provide for quarantine or other regulatory action. They are: The Plant Quarantine Act of 1912; the act providing for Mexican border inspection and control service; the Insect Pest Act of 1905; and the Terminal Inspection Act of 1915 (in cooperation with the Post Office Department).

In addition to the enforcement of these acts, the Bureau conducts an export-certification service, made possible by the Export Certification Act. This service makes it possible for exporters of domestic plants and plant products to obtain certificates of inspection which are necessary to meet the varying sanitary requirements of foreign countries.

The Plant Quarantine Act was the culmination of several years of effort to obtain legislation that would make possible the protection of the agriculture and horticulture of the United States from the introduction and spread of foreign plant pests. The act was approved August 20, 1912, and the quarantine provisions of section 7 (the foreign section) became immediately effective so far as they applied to the white pine blister rust, potato wart, and the Mediterranean fruitfly. With this exception, the act did not become effective until October 1, 1912.

Following the holding of the public hearings required under the act, quarantines on account of the white pine blister rust, the Mediterranean fruitfly, and the potato wart were promulgated on September 16, 18, and 20, 1912, respectively. Quarantines on account of the gypsy moth and brown-tail moth, the Mexican fruitfly, date-palm scale insects, and the pink bollworm of cotton followed in rapid succession.

The rules and regulations governing the entry of nursery stock into the United States were originally issued September 18, 1912, as Circular 41, Office of the Secretary, under the title "Rules and Regulations for Carrying out the Plant Quarantine Act," and applied only to "woody plants and parts thereof for propagation or planting." These regulations were subsequently revised three times and on November 18, 1918, Quarantine No. 37, with regulations (nursery stock, plant, and seed quarantine effective on and after June 1, 1919) was issued and, as since amended, is still in effect. This quarantine and supplemental regulations superseded the rules and regulations theretofore enforced governing the entry of nursery stock.

At the present time there are 20 foreign and 18 domestic plant quarantines and restrictive orders in force.

By joint resolution of the Seventy-fifth Congress, approved April 6, 1937, the Bureau is authorized to cooperate with the States in putting on intensive control campaigns to protect crops ad livestock from widespread outbreaks of insects and plant diseases. This basic legislation has been one of the recent developments and has far-reaching effects.

FOREIGN PLANT QUARANTINES

Under the Plant Quarantine Act, 20 quarantines and restrictive orders prohibiting or regulating the entry of foreign plants and plant products are now enforced. These quarantines and regulations have been promulgated for the purpose of preventing the entry of injurious insects and plant diseases which either do not occur in the United States or have at present a limited distribution. Among such pests are citrus canker, potato wart, bamboo smut, pink bollworm of cotton, banana weevils, sweetpotato and yam weevils, European corn borer, several species of fruitflies, various insects and plant diseases affecting nursery stock, Dutch elm disease, and others.

Provision is made for the entry under permit of certain plants, cereals, fruits, vegetables, cotton, and other products believed to carry a negligible pest risk, at designated ports of entry, subject to inspection and, if necessary, to disinfection.

Plant-quarantine inspectors are stationed at all of the more important ports of entry and, in addition to enforcing the entry requirements on commercial importations, are engaged, in cooperation with the Treasury and Post Office Departments, in the inspection of ships, airplanes, passengers' baggage, crews' quarters, ships' stores, and foreign parcel-post packages for the presence of prohibited plant material which might be the means of introducing injurious plant pests.

THE INSECT PEST ACT OF 1905

The Insect Pest Act of 1905, which prohibits the importation or interstate transportation of insect pests and the use of the United States mails for that purpose, is enforced by plant-quarantine inspectors stationed at the various ports of entry, in cooperation with the officials of the Treasury and Post Office Departments.

OTHER LAWS ENFORCED BY THE BUREAU

The discovery of the pink bollworm of cotton in the so-called Laguna district of Mexico and the possibility of the entry of this insect into the United States in railway cars, freight, express, baggage, and other materials from Mexico led to the inclusion of the Mexican Border Act in the Department of Agriculture Appropriation Act for the fiscal year 1918 and its repetition each year thereafter. This act supplements the Plant Quarantine Act of 1912 by giving additional powers with respect to the control of the movement of railway cars and other vehicles entering the United States from Mexico. As a condition of entry, all freight cars are inspected in the Mexican freight yards opposite the American port of entry and, as an added precaution, fumigation is required of certain types of cars. The fumigations are performed in houses especially designed and constructed for this purpose.

The Bureau also enforces all quarantines and regulations governing the entry of plants, fruits, vegetables, cottonseed products, and other articles from Mexico. Plant-quarantine inspectors are stationed at all the more important ports of entry on the Mexican border.

The Bureau also administers an act to regulate foreign commerce in the importation into the United States of the adult honeybee to prevent the introduction of dangerous bee diseases.

In addition to enforcing various provisions with a view to preventing the introduction of plant pests, the Bureau maintains a certification service under the Export Certification Act which enables exporters of fresh fruits, vegetables, nursery stock, and other plant material to obtain the necessary inspection and certification of their products when offered for export to meet the sanitary requirements of various foreign countries. This activity is conducted under authority given the Secretary of Agriculture in each appropriation act of the Department since 1927.

As a result of a cooperative arrangement with the Bureau of Agricultural Economics, a considerable amount of the inspection of apples and pears for export is done by inspectors of that Bureau at shipping points and the sanitary certificate is issued by the plant-quarantine inspector at the port of export on the basis of the inspection report submitted by the shipping-point inspector. This service is available at all of the important ports of export in this country.

DOMESTIC PLANT QUARANTINES

The Division of Domestic Plant Quarantines, in cooperation with the affected States, directs the field work relating to the control of the sweetpotato weevil and the white-fringed beetle, the control and prevent of spread of the phony peach and peach mosaic diseases, and the eradication of citrus canker. Several emergency and incipient outbreaks of crop pests such as grasshoppers and Mormon crickets are the subject of control projects assigned to this Division in cooperation with States, counties, and communities. Domestic plant quarantines are established to curb the spread of certain dangerous plant pests beyond currently recognized boundaries. Nursery stock and other plants or plant products in the hands of common carriers are inspected in transit and shipments moving in violation of quarantine regulations are intercepted and returned to shippers through the cooperation of the Post Office Department and railway agencies.

GYPSY MOTH AND BROWN-TAIL MOTH CONTROL

The Division of Gypsy Moth and Brown-Tail Moth Control, with headquarters at Greenfield, Mass., is concerned primarily with the control and prevention of spread of the gypsy moth. In order to protect uninfested portions of the United States and reduce damage to forest, shade, and orchard trees attacked by these pests, a barrier zone to prevent the spread of the gypsy moth is maintained. It embraces an area ranging from 25 to 30 miles in width, extending from the Canadian border to Long Island Sound east of the Hudson River and includes territory in eastern New York, western Vermont, Massachusetts, and Connecticut. Inspection of this area is necessary and control measures are used to stamp out incipient infestations before they can gain a substantial foothold. The work in New York State is done in cooperation with the State Department of Conservation. Areas directly east of the barrier zone where infestation exists are treated, so far as funds will permit, in order to reduce the density of infestation and prevent spread into the zone. An isolated infestation in northeastern Pennsylvania is being treated in cooperation with the Department of Agriculture and the Department of Forests and Waters of that State. Control work against the brown-tail moth is conducted principally by the infested States and local authorities in cooperation with this Division.

JAPANESE BEETLE CONTROL

Enforcement of the principal Federal and/or State plant quarantines in the Eastern States, designed to prevent the spread of the Japanese beetle, the gypsy and brown-tail moths, the European corn borer, and the Dutch elm disease, is assigned to this Division. Joint

inspection is available under both Japanese beetle and moth quarantines in areas in which the two quarantines overlap. Further joint inspection service is supplied to meet the demands for Federal certification of plant material restricted by certain State quarantines on account of the European corn borer. One of the major projects of the Division is the long-time program having as its objective the eradication of the Dutch elm disease, an introduced fungus disease that threatens the American elm throughout the country. This work, centered within a radius of 50 miles of New York City, requires systematic scouting of all elms in the infected zone to locate diseased trees, prompt removal and destruction of trees found by laboratory diagnosis to be diseased, and extensive elm-sanitation activities to remove dead and devitalized elms that serve as breeding places for the elm bark beetles that carry infection from diseased to healthy trees. Similar programs are carried on at a number of isolated infections in Maryland, West Virginia, Ohio, and Indiana. Since the eradication campaign began in 1933, the bulk of the labor has been employed on emergency relief funds. Japanese beetle quarantine and Dutch elm disease eradication activities are cooperatively financed by the Federal Government and the affected States.

PINK BOLLWORM AND THURBERIA WEEVIL CONTROL

The functions of the Divisions of Pink Bollworm and Thurberia Weevil Control are the prevention of spread of the pink bollworm of cotton in parts of the States of Texas, New Mexico, and Arizona; the eradication in southern Florida of wild cotton which, in 1932, was found to be infested with the pink bollworm; and the prevention of spread of the Thurberia weevil in Arizona. This work involves scouting to determine the range of infestation, clean-up operations, the enforcement of quarantine restrictions on movement of articles covered, inspection of mills, gins, rolling stock, automotive equipment, and other possible carriers of these pests, and the maintenance of road stations on highways to prevent the movement of contraband material to uninfested localities.

MEXICAN FRUITFLY CONTROL

The Division of Mexican Fruitfly Control is concerned with the prevention of spread of the Mexican fruitfly from the quarantined area in the lower Rio Grande Valley to other fruit-growing regions of the United States. This work is conducted with the cooperation of the Texas State Department of Agriculture, which contributes both funds and personnel. A host-free period is maintained during the summer months, during which time no ripe or ripening citrus or other host fruits are allowed on the trees. Trapping operations are conducted throughout the year to determine the presence or absence of the fruitfly, about 8,000 traps being kept in operation. Movement of fruit is controlled by issuance of permit tags to packers and master permits to carriers, road stations being maintained to enforce this phase of the quarantine regulation. Upon determination that the fruit in a certain area is infested with the larvae of the Mexican fruitfly, such fruit is required to be treated by either heat or cold sterilization, or sent to processing plants.

PLANT DISEASE CONTROL

The Division of Plant Disease Control cooperates with the affected States and Federal agencies administering public lands in the eradication or control of 2 plant diseases of major economic importance, namely, the white pine blister rust and the black stem rust of grains. The essential features of the work consist of the cooperative eradication of currant and gooseberry plants for the control of white pine blister rust in 29 States in the 5 important white pine-forest regions of the country, and the eradication of rust-susceptible barberry and *Mahonia* plants in cooperation with 17 northern grain-growing States for the control of black stem rust of wheat, oats, barley, and rye. Blister rust produces fatal cankers on white pine trees, and control of the disease is necessary to make possible the continued production of these trees in the forests of the country, provide the raw material for dependent industries, and furnish employment for large numbers of people. Black stem rust is one of the most destructive of all diseases that attack small grains. It is caused by a parasitic fungus which lives on the leaves of certain kinds of barberry bushes in the spring, spreading from there to grains and grasses as the growing season advances. The eradication of rust-susceptible barberry bushes in the important grain-growing areas of the northern part of the United States eliminates the local sources of stem rust infection and is proving a practical means of reducing the extensive annual rust losses that grain growers have experienced in recent years. In both these projects the Division is responsible for the leadership and technical supervision and for coordinating the activities of the several agencies cooperating.

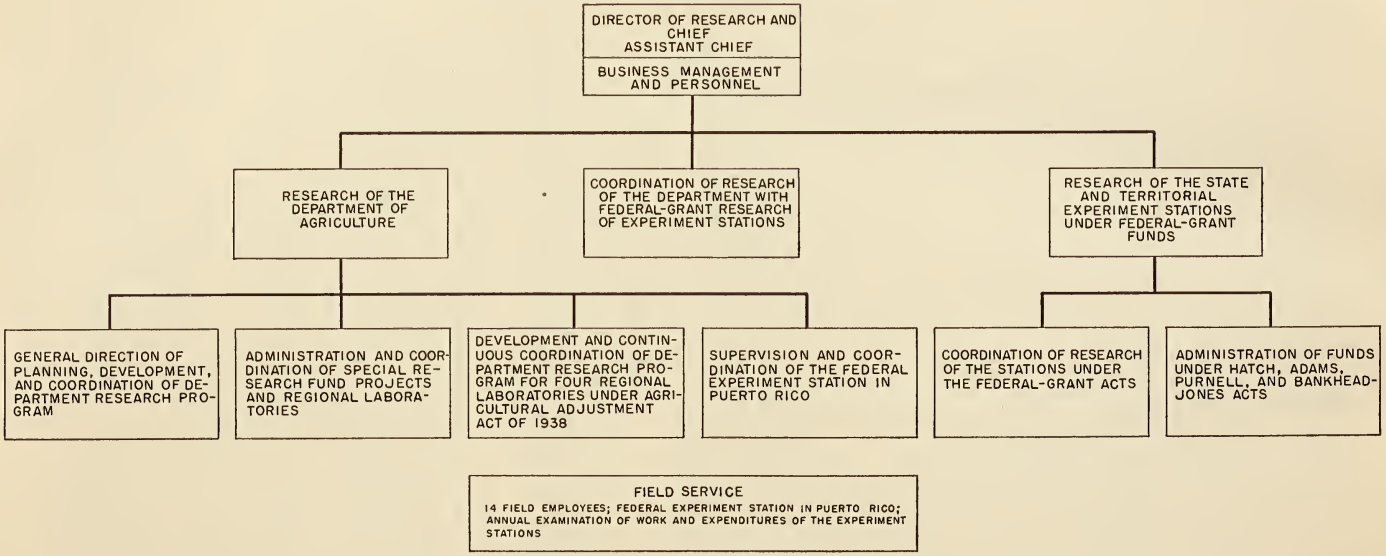
INFORMATIONAL WORK

The Insect Pest Survey and Information Division keeps a file of records on insect pests, noting seasonal abundance, distribution, and damage, and issues a monthly bulletin, with supplements and an annual summary. It handles routine inquiries on insect pests and regulatory matters which can be largely answered by sending publications. It edits notices of plant quarantines and restrictive orders, the Service and Regulatory Announcements of the Bureau, the Bureau News Letter, and the Field Directory. It issues all requests for duplicating and photographic work and maintains the mailing lists of the Bureau. The office has general charge of illustrations and exhibits and of the distribution of entomological and regulatory information.

The Editorial Office is responsible for the editorial review and editing of scientific, technical, semitechnical, and popular manuscripts submitted by members of the Bureau for publication by the Department or other agencies.

To facilitate the work of the Bureau an extensive collection of books on all phases of entomology is maintained. The Bureau library prepares indexes of entomological literature and bibliographies on special subjects. An extensive collection of photographs of entomologists, together with biographical and bibliographical data, is also maintained.

OFFICE OF EXPERIMENT STATIONS


DIRECTOR OF RESEARCH AND CHIEF
ASSISTANT CHIEF
BUSINESS MANAGEMENT AND PERSONNEL
RESEARCH OF THE DEPARTMENT OF AGRICULTURE
COORDINATION OF RESEARCH OF THE DEPARTMENT WITH FEDERAL-GRANT RESEARCH OF EXPERIMENT STATIONS
RESEARCH OF THE STATE AND TERRITORIAL EXPERIMENT STATIONS UNDER FEDERAL-GRANT FUNDS
GENERAL DIRECTION OF PLANNING, DEVELOPMENT, AND COORDINATION OF DEPARTMENT RESEARCH PROGRAM
ADMINISTRATION AND COORDINATION OF SPECIAL RESEARCH FUND PROJECTS AND REGIONAL LABORATORIES
DEVELOPMENT AND CONTINUOUS COORDINATION OF DEPARTMENT RESEARCH PROGRAM FOR FOUR REGIONAL LABORATORIES UNDER AGRICULTURAL ADJUSTMENT ACT OF 1938
SUPERVISION AND COORDINATION OF THE FEDERAL EXPERIMENT STATION IN PUERTO RICO
COORDINATION OF RESEARCH OF THE STATIONS UNDER THE FEDERAL-GRANT ACTS
ADMINISTRATION OF FUNDS UNDER HATCH, ADAMS, PURNELL, AND BANKHEAD-JONES ACTS
FIELD SERVICE
14 FIELD EMPLOYEES; FEDERAL EXPERIMENT STATION IN PUERTO RICO; ANNUAL EXAMINATION OF WORK AND EXPENDITURES OF THE EXPERIMENT STATIONS

OFFICE OF EXPERIMENT STATIONS

The Office of Experiment Stations (1) represents the Department in the administration of the acts of Congress making appropriations for the support of agricultural experiment stations in the several States, Alaska, Hawaii, and Puerto Rico; (2) administers the Federal agricultural experiment station in Puerto Rico; (3) administers the special research fund authorized by sections 3 and 4, title I, of the Bankhead-Jones Act of June 29, 1935; (4) has general direction of the planning, development, and coordination of the research program of the Department with the cooperation of the bureaus involved, including the four regional research laboratories established pursuant to the provisions of section 202 of the Agricultural Adjustment Act of 1938; and (5) assists in the coordination of the research work of the State agricultural experiment stations, and the coordination of the research of the Department with that of the State agricultural colleges and experiment stations.

ADMINISTRATION OF FEDERAL-GRANT FUNDS

Administration of the Hatch, Adams, Purnell, and Bankhead-Jones Acts granting funds for agricultural research to the States and Territories, includes examination and approval of research projects in advance of the expenditure of funds, and review of the work and examination of the expenditures at each station as a basis for certifying the respective States, Alaska, Hawaii, and Puerto Rico to receive Federal funds. Programs of projects with proposed expenditures under the Federal funds are submitted by each station for review and approval at the beginning of each fiscal year. Changes and adjustments to best meet State needs are submitted throughout the year. Representatives of the Office visit each of the State stations at least once annually and review the program, expenditures, and future plans for each project receiving support from Federal funds. The work and expenditures of the stations involving State funds submitted as offset to the Bankhead-Jones funds are also reviewed and examined.

During the fiscal year 1939 the Federal grants to the States, Territories, and Puerto Rico amounted to $6,541,250. Each State received $90,000 under the Hatch, Adams, and Purnell Acts, while Alaska received $23,750, Hawaii $55,000, and Puerto Rico $42,500. The $2,100,000 provided under the Bankhead-Jones Act was allotted on the basis of rural population.

ADMINISTRATION OF THE PUERTO RICO FEDERAL STATION

Administration of the Federal station in Puerto Rico involves approval of budgets, expenditures, and research projects; the review, editing, and approval of publications; and general administrative

direction. The Office also has the responsibility of coordinating the work of the Federal station of Mayaguez and that of the Department on the island with the work of the agricultural experiment station of the University of Puerto Rico at Rio Piedras which receives the benefit of the funds authorized by the Hatch and supplemental acts under the Puerto Rico Station Act of March 4, 1931. The primary function of the Federal station is to serve national interests and responsibility in agricultural investigations in the Tropics. The work of the University station deals chiefly with agricultural and rural life problems of Puerto Rico, and the two stations cooperate in problems of mutual interest.

COORDINATION OF STATE AND FEDERAL RESEARCH

The coordination of the research of the Department with that of the State and Territorial stations and coordination of the research work among the stations are constantly in mind when the projects and programs of the stations are under consideration, and when their work and expenditures are reviewed and discussed with the directors and research staffs. Effective use is made of the project files of the Office which show the active status of the 8,500 State- and Federal-fund research projects under investigation at the stations. During the fiscal year 1938 the Office examined, approved, and recorded more than 1,350 new or revised memoranda of understanding covering cooperative research between the stations and bureaus of the Department. Every opportunity is taken to promote effective cooperation between the stations and the Department. Through personal conferences and research committees close advisory relations are maintained with bureaus of the Department. Each of the regional laboratories established under the provisions of the Bankhead-Jones Act has been organized to serve as a coordinating agency and focal center in specific research fields for the respective regions under memoranda of understanding between the Department and the stations.

As an aid in planning research, avoiding duplicating, and coordinating research work, the Office publishes in Experiment Station Record abstracts of agricultural and home economics research literature with editorials and notes on developments in research. About 7,000 such abstracts are prepared, edited, and published in 2 annual volumes of about 1,000 pages each. The Office also maintains a current file of the workers in subjects pertaining to agriculture in the land-grant colleges and experiment stations and publishes a revised list of these workers annually. The annual report on the work and expenditures of the stations, as required by law, is issued, and other lists and compilations of information are published from time to time, including a monthly mimeographed list of new station publications.

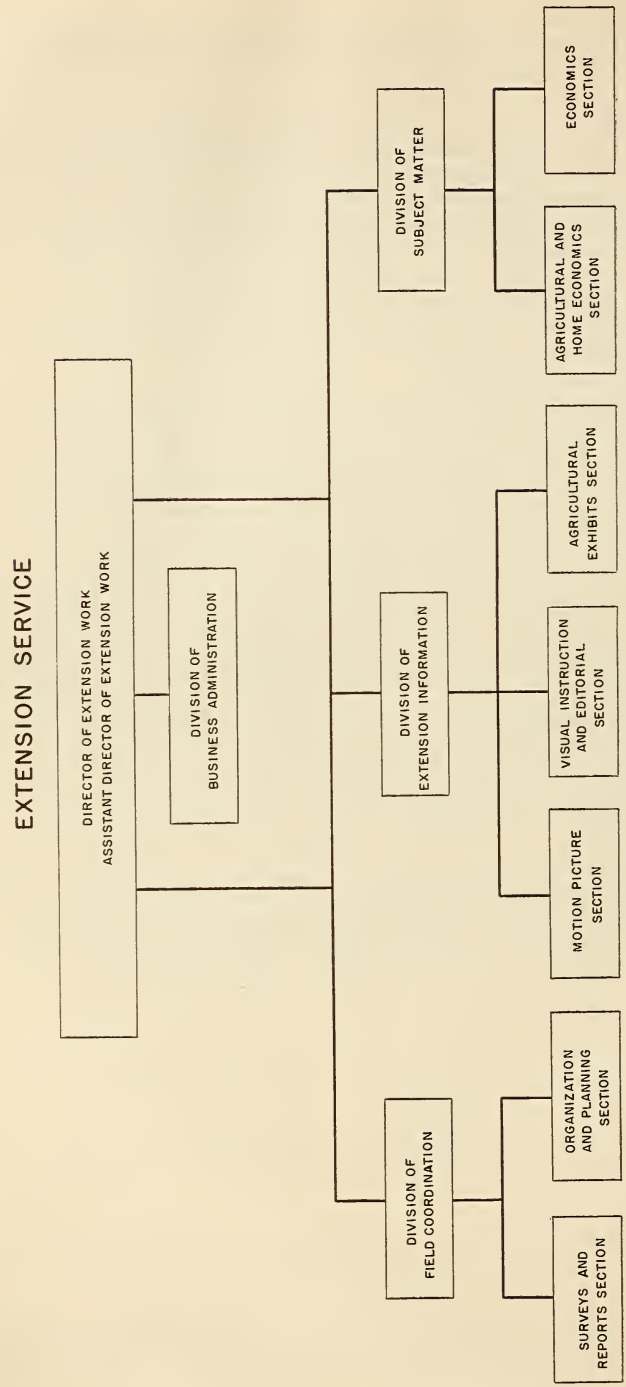
PLANNING, DEVELOPMENT, AND COORDINATION OF DEPARTMENT RESEARCH PROGRAMS

The Office is responsible for the development of programs for presentation to the Secretary of work to be undertaken by the Department bureaus as special research projects and work to be con-

ducted at the regional research laboratories authorized by the Bankhead-Jones Act; for general assistance in the planning, directing, and supervising of the work; and for the administration of the funds.

The Director of Research and Chief of the Office of Experiment Stations also has responsibility in cooperation with the bureaus of the Department, for general direction in the development and continuous coordination, of a departmental research program for the four regional research laboratories established "to conduct researches into and to develop new scientific, chemical, and technical uses and new and extended markets and outlets for farm commodities and products and byproducts thereof" under the provisions of section 202 of the Agricultural Adjustment Act of 1938. He has general direction of the planning, development, and coordination of the research program of the Department.

Assistance in coordinating the research work of the Department is accomplished through advising with the bureau chiefs and the Secretary, special attention being given to adjustments of closely related research in different bureaus and to the coordination and integration of new research with existing activities of the Department. The planning of projects under the special research fund includes consideration of the entire departmental organization as to the agencies which can contribute effectively to the solution of the problems involved. Much of the work under this fund is cooperative between two or more bureaus, and many of the projects also involve cooperation with the agricultural experiment stations and with other agencies, both public and private. The recommendations on which final decisions are based as to programs of work and location of the regional laboratories established under special research funds are worked out in conferences between representatives of the Department and the State stations of the region involved. Representatives of the stations serve as collaborators of the laboratories and confer with departmental representatives in reviewing progress and planning future work. In carrying out the programs of these laboratories, the Office staff naturally and necessarily is called upon for information and assistance as to the program at each State experiment station and as to records of cooperation between the bureaus of the Department and the State stations.


EXTENSION SERVICE
DIRECTOR OF EXTENSION WORK
ASSISTANT DIRECTOR OF EXTENSION WORK
DIVISION OF BUSINESS ADMINISTRATION
DIVISION OF FIELD COORDINATION
SURVEYS AND REPORTS SECTION
ORGANIZATION AND PLANNING SECTION
DIVISION OF EXTENSION INFORMATION
MOTION PICTURE SECTION
VISUAL INSTRUCTION AND EDITORIAL SECTION
AGRICULTURAL EXHIBITS SECTION
DIVISION OF SUBJECT MATTER
AGRICULTURAL AND HOME ECONOMICS SECTION
ECONOMICS SECTION

EXTENSION SERVICE

A common desire to find an answer to fundamental farm problems draws together the Department, the State land-grant institutions, and the farm people. These three groups maintain close contact with each other through an extension service in which each group has a share both in responsibilities and in accomplishments. This extension service is composed of Federal and State administrative and subject-matter groups, and resident county extension workers in whose direction and financing the Department, the State land-grant institutions, and the people within the individual counties cooperate.

This cooperative undertaking, the Extension Service, dates from the enactment of the Smith-Lever Act of May 8, 1914. From a modest coordination of extension work then in progress in scattered counties and States, it has had a steady growth in keeping with the growth of new agricultural knowledge and the confidence of farm people in the practical application of research.

At present, all agricultural counties in the States and Territories have an agricultural extension worker, and about half of the counties have a resident home economics extension agent. These resident extension workers are commonly known as county agents and home demonstration agents. A number of counties also have extension agents employed for work with young people exclusively; counties having only one or two extension agents expect these agents to work both with adults and with boys and girls.

From their beginning as a strictly educational service, the programs of extension work have progressed from those of early extension days which dealt with remedies for production problems on the farm and with simple food and clothing demonstrations for the homemaker, on through phases of farm and home management, to present-day programs which involve training for the cooperative action, adaptations, and adjustments on the part of farm people needed to meet problems brought about by economic and social forces too far reaching to be met by individuals alone.

RESPONSIVE TO FARM NEEDS

Whatever the needs of rural people anywhere, those needs are the concern of extension agents and are reflected back to the State land-grant institutions and the Federal Department. With the passage, in 1933, of the Agricultural Adjustment Act, which gave farmers an opportunity to act together on the problems of huge surpluses of agricultural commodities, an intensified educational campaign was launched by the Department through the Extension Service to acquaint farmers with the provisions of the act and the procedure they might follow to join with other farmers in an effort to bring

about an adjustment of the supply of agricultural products in line with the demand for them.

The county agent was already informed on the farming of his county and on the interests and abilities of its people. Farmers were accustomed to working with him and had confidence in him. The Adjustment Act required an unprecedented amount of educational work because of the necessity for fully informing all farmers in time for them to act quickly in an organized way. The nearly 7 million farmers of the country received sufficient information on the provisions of the Congressional act to arrive at decisions, and obtained help also from the Extension Service in setting up emergency local organizations.

Response by the Extension Service to emergency situations has been called for almost every year since 1914. War, droughts, floods, hurricanes, the boll weevil, grasshoppers, and similar plagues have required extension people to cooperate with relief agencies in rehabilitating stranded families, to help with conserving food, feed, and equipment, to give counsel on cheap yet adequate diets, and to aid in the maintenance of morale through increased recreation, social life, emergency employment, handicraft work, and like benefits.

A number of Federal and State agencies in recent years have conducted programs toward specific rural problems with emergency angles, and also toward the gradual correction of long-standing disadvantages or wrong practices. Extension workers help to coordinate these activities within each county and assist rural people to perfect the necessary organization for utilizing various means provided by legislation for their benefit.

LAND USE PLANNING

The Extension Service, in cooperation with other agencies of the Department, is participating in land use planning. It is helping farmers to study their problems of land use and to plan a course of action to meet their own needs with the help of the special agencies provided for that purpose. Planning committees have been set up in 2,200 counties. About half of these committees have started to make land use maps for their counties. The maps show just how each piece of land is now being used, and give information from scientific surveys, census statistics, land records, and similar sources. When this information is assembled, the local farm groups can study their problems in the light of the significant facts and can formulate a long-time program for better agriculture and better living.

TRAINING LOCAL LEADERSHIP

One of the most important functions of extension workers is the training of farmers and farm women for voluntary leadership in formulating and carrying out the program of extension work in their communities. More than 400,000 men and women are serving each year as volunteer leaders in this work.

Rural leaders of the future are in training now in the 4–H Clubs which extension workers conduct for rural boys and girls. Each 4–H Club member carries to completion, as a part of his or her club work, a farm or home activity, under the supervision of the county extension

agents. These projects involve all elements of farming and homemaking and are conducted in such a way as to stimulate and maintain the interest of farm young people in the farm as a better place to work and live. In the 4–H Clubs, the rural youth learns to cooperate, to enter into group discussions, to speak in public, to think in terms of community betterment, and to qualify himself generally for better citizenship.

OBJECTIVES

The major objectives of the Extension Service are to develop rural leadership, to organize and stimulate farm people in program planning, to help conserve and improve the soil, to help improve family living standards, to help farm families to provide adequately for their food and clothing needs, to help underprivileged farm families to become self sustaining, to help provide farm people with the latest economic, scientific, and other information to enable them to make needed adjustments, and to utilize to the best advantage the research and action facilities available.

COST BORNE COOPERATIVELY

The expense of carrying on extension work in agriculture and home economics in the States and Territories is shared by the National Government, the States, the Territories, and counties that participate in the work. During the year ended June 30, 1938, the cooperative cost was $31,592,254.41.

Of the total, 55.2 percent ($17,443,132) was provided by the National Government; 20.7 percent ($6,526,988) from State funds; 21.2 percent ($6,695,016) from county funds; and the remainder, 2.9 percent ($927,118) was supplied by local organizations and individuals. All county appropriations are expended within the county making the contribution and are used to pay a part, or all, of the local extension agent's salaries and expenses incident to the county extension program.

A part of the Federal money is available to States and counties only when it is matched by similar State appropriations. The proportion of Federal money allotted to a State is determined by the ratio of the State's rural population to the rural population of the United States.

EXHIBITS AND MOTION PICTURES

The Division of Exhibits designs, prepares, and arranges to display exhibits relating to the work of the Department at State, interstate, and international fairs and expositions within the United States. It also designs, prepares, and arranges to display exhibits under special appropriations for such occasions as the World's Poultry Congress, and international expositions either within the United States or abroad. It is responsible for all exhibit activities of the Department. The Division has Department exhibits at approximately 70 fairs and expositions throughout the United States each year.

Motion pictures have been used by the Department for many years in disseminating agricultural information. The Division of Motion Pictures produces both sound and silent motion pictures on a wide

variety of subjects, and these films are lent free to extension workers and others cooperating in agricultural education. The Department maintains a small, but complete laboratory through which it cooperates with the bureaus of the Department and with State agricultural colleges in the utilization of the motion picture in educational work. The laboratory provides facilities for studies in cinemicrography and time-lapse cinematography. It has a library of about 150 subjects. Shipments of films to borrowers average about 6,000 per year.

LAWS PROVIDING FOR EXTENSION WORK

The extension work in which the United States Department of Agriculture, the land-grant colleges, and the various counties cooperate, is provided for by the Smith-Lever Act of May 8, 1914, the Capper-Ketcham Act of May 22, 1928, the Bankhead-Jones Act of June 29, 1935, and supplementary acts for extending the benefits of that legislation to certain Territories and for similar purposes. Section 5 of the Clarke-McNary Act of June 7, 1924, provides for cooperative farm woodland demonstrations. Legislative provision for the Division of Motion Pictures and Division of Exhibits is included in the annual agricultural bill, but Congress makes special appropriations for the preparation of exhibits for such occasions as international expositions.

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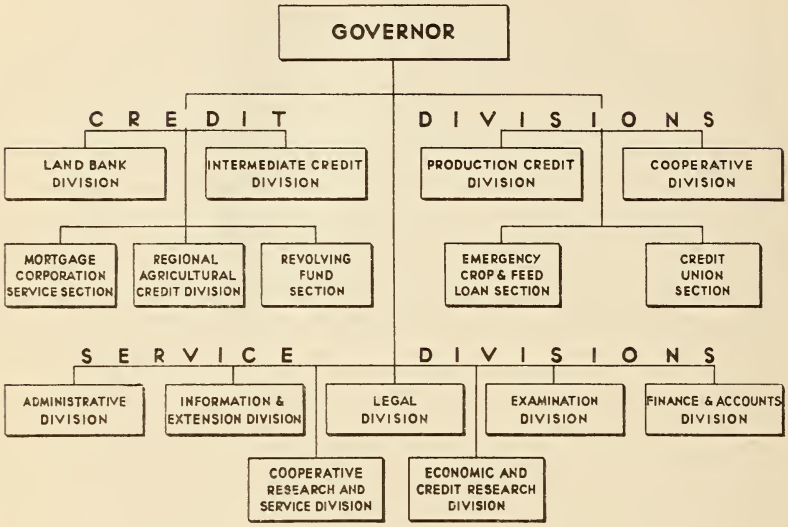
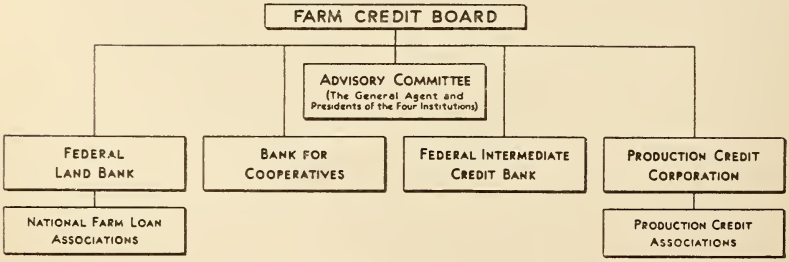
FARM CREDIT ADMINISTRATION

WASHINGTON OFFICE



TWELVE FARM CREDIT DISTRICTS



FARM CREDIT ADMINISTRATION

The Farm Credit Administration, organized by Executive order in 1933, has under its supervision a Nation-wide system of permanent agricultural-credit units and in addition a number of emergency credit organizations. Under the President's first Government Reorganization Plan which became effective June 24, 1939, the Governor of the Farm Credit Administration became responsible to the Secretary of Agriculture rather than directly to the President as had been the case since the Farm Credit Administration was established to coordinate the activities of all institutions making loans to farmers then operating under Federal supervision.

Farmers and stockmen make extensive use of long-term mortgage loans to help them acquire farm property and to refinance existing debts. They use short-term loans to finance the production and harvesting and marketing of crops, the raising of livestock, and for general farm purposes. Farmer-cooperatives also need credit to supplement their operating capital and to provide necessary building and equipment.

The cooperative farm-credit system operating under the supervision of the Farm Credit Administration makes these types of loans available from permanent dependable sources on terms suited to the needs of agriculture at the lowest possible cost consistent with sound business practices. The Federal land banks through the national farm-loan associations have been making long-term first mortgage loans on agricultural lands since 1917.

Shortly after the Farm Credit Administration was organized, Congress enacted legislation authorizing it to strengthen and extend the service of this cooperative farm-mortgage-credit system. In addition, it made available funds for the making of first- or second-mortgage loans to be used in cases where the risks were greater than a system dependent on private funds could afford to assume. The Commissioner makes use of the facilities of the Federal land banks and national farm-loan associations to make these loans.

In 1933 the Farm Credit Administration was also authorized to assist farmers in establishing a Nation-wide system of local cooperative short-term credit units and to establish a cooperative credit system for farmers' marketing, purchasing, and business service associations.

For the purpose of making agricultural credit available to farmers, the country is divided into 12 farm-credit districts. In each district the following four major credit units are located in one central office: (1) The Federal Land Bank, which makes long-term mortgage loans through the national farm-loan associations; (2) the Production Credit Corporation, which supervises local production credit associations which make short-term loans to finance all types of farm operations; (3) the Bank for Cooperatives, which makes

loans to farmer-cooperatives; and (4) The Federal Intermediate Credit Bank, which acts as a bank of discount to supply short-term funds required by production-credit associations, private financing institutions which make loans to farmers, and farmer cooperatives.

LONG-TERM MORTGAGE CREDIT

A farmer desiring a long-term mortgage loan applies at his local national farm-loan association of which there are now 3,850 serving nearly every agricultural county in the United States. Where a local association is not available, applications are made direct to the Federal land bank of the district. Two types of loans are available. First-mortgage loans are made by the Federal land banks for periods of 20 to 30 odd years up to 50 percent of the normal agricultural value of the land plus 20 percent of the insurable value of the buildings. First- or second-mortgage loans, known as Land Bank Commissioner loans, are made from funds supplied by the Federal Farm Mortgage Corporation, up to 75 percent of the normal agricultural value of the farm. Both types of loans are used by farmers to refinance existing indebtedness. Young farmers and tenants also borrow to purchase farms of their own. Proceeds of the loan may be used to provide buildings or improve farm land or for general agricultural purpose.

Every farmer or stockman who gets a land-bank loan through a national farm-loan association becomes a part owner of the association by acquiring stock equal to approximately 5 percent of his loan. Purchase of stock in the local association entitles the shareholder to vote at the meetings of the association at which directors are elected and the business of the organization transacted. Each shareholder has one vote regardless of the amount of stock he owns. If a farmer applies for a loan from his national farm-loan association and it is approved by the loan committee of the association, it is sent to the land bank which has an appraiser visit the farm. The appraiser is a public official appointed by the Farm Credit Administration in Washington.

A farmer makes one application for either a land-bank or Land Bank Commissioner loan, and only one appraisal is made. The decision as to whether the land bank and the Land Bank Commissioner either jointly or separately make the loan depends upon the proportion of the value of the property the farmer wishes to borrow and other factors brought out by the appraisal. Land-bank and Land Bank Commissioner loans are made for periods from 20 to 30 odd years and are repaid in annual or semiannual payments.

Since the organization of the national farm-loan associations and Federal land banks in 1917 farmers have obtained 888,000 loans for $3,131,000,000. Acting as the agent for the Land Bank Commissioner, the associations and banks have also made 536,000 loans to farmers for $994,000,000. On January 1, 1940, the total amount of these two types of loans outstanding aggregated $2,595,000,000.

SHORT-TERM PRODUCTION CREDIT

Farmers with a sound basis for credit may obtain short-term loans from their local production-credit association which finances all types of farms and ranch operations. There are now 525 of these local

cooperative organizations serving every agricultural county in the country. Farmers borrow from production-credit associations to finance the production, harvesting, and marketing of crops; the breeding, raising, feeding, and marketing of livestock or commercial poultry; the repair, improvement, and alteration of farm buildings; and for many other general agricultural purposes. Typical ways in which farmers use these loans are for the purchase of seed, feed, fertilizer, spray materials, farm machinery, workstock, cattle, sheep, household equipment, or the hiring of farm labor.

The size of any loan depends upon the credit needs of the farmer and his ability to repay the loan with interest. Because farmers and stockmen pay their loans from the money they receive from the sale of crops, livestock, or livestock products, the length of time for which the association makes the loan depends upon when the borrower expects to market his products. Crop loans are usually repaid in from 2 to 9 months. Loans to dairymen and cattle or sheepmen are generally made for a year or less but may be renewed annually for not more than 2 additional years, if the financial condition of the farmer and his record of repayment are satisfactory.

Interest and service charges on these loans are kept as low as sound business practice will permit. On March 15, 1940, the interest per year was 4½ percent. The interest charged members depends largely upon the discount rate of the Federal Intermediate Credit Bank of the district, because production-credit associations are limited in the interest rate they may charge farmers or stockman to 3 percent more than the discount rate of the Federal Intermediate Credit Bank. Notes given by farmers who borrow from production-credit associations are discounted by the Federal Intermediate Credit Bank which in turn, together with similar banks in the other districts, sell the debentures to the investing public. Every farmer and rancher who uses his production-credit association becomes a member and shares in the ownership and control of his local association. Each member becomes an owner by purchasing voting stock equal to $5 for each $100 or part of $100 borrowed. After his loan is paid off, the stock may be used in connection with future loans. The ownership of stock entitles each member to one vote. These local associations have an annual business meeting. At this meeting the farmers elect from their own members a board of directors to determine policies, hire employees, and choose an executive committee which considers all applications for loans.

The stock owned by the members is known as class B stock and furnishes part of the capital for the association. Additional capital is supplied by the Production Credit Corporation of the district in the form of nonvoting stock, called class A. This stock is preferred in case of liquidation but shares equally with class B stock in dividends. Class A stock is also held by farmers or private investors.

Many members of production-credit associations are able to further reduce the cost of their farm operations by planning their expenditures in advance and arranging to obtain their loans in a series of advances as they need the money during the season. Because the interest is charged on each dollar only for the actual number of days it is outstanding, a farmer who has made arrangements for such a loan assures himself of adequate financing for the

entire season, and at the same time reduces his interest cost to a minimum.

Many farmers use their loans from their production-credit associations to enable them to pay cash for their purchases instead of buying on time. This also reduces operating expenses by enabling them to purchase their supplies at lower prices and eliminating the high cost of financing such purchases which often are equal to interest rates of 10 to 40 percent.

On January 1, 1940, production-credit associations had 292,000 members. Farmers had obtained more than 1,300,000 loans for nearly $1,500,000,000 since the associations were organized in 1933 and 1934. However, only $154,000,000 of these short-term loans was outstanding on January 1, and the losses and provisions for estimated losses amounted to less than one-half of 1 percent during this period. The members of the associations had accumulated a total of $16,166,000 of voting stock in their local association and the association had been able to set up reserves of earnings equal to $14,696,000 to protect the investment and provide stability of their members' source of credit.

LOANS TO FARMER COOPERATIVES

Farmer marketing, purchasing and business-service cooperatives obtain loans to finance the acquirement of facilities such as building and equipment, obtain operating capital loans and loans secured by commodities to assist them in the orderly marketing of their products from the 12 district banks for cooperatives. These district banks serve associations in their districts. Large regional or national cooperatives in some cases get their loans from the Central Bank for Cooperatives in Washington.

These banks make three distinct types of loans: Commodity loans are made for the shortest terms on the security of commodities to either marketing or purchasing associations. Commodity loans are usually repaid at the time the commodities financed are sold. Operating capital loans are also made for relatively short terms but usually for longer periods than commodity loans. They are frequently used to supplement the cooperative association's own capital funds during seasons when activities are at a peak. Operating capital loans are generally repaid at the end of the marketing season but in some cases mature over longer periods. Facility loans are made for the purpose of financing or refinancing the acquisition of land, buildings, or equipment used in carrying on the business of a cooperative association. The security generally consists of a first lien on the property itself with such additional collateral as may be required. Loans are limited to 60 percent of the appraised value of the security offered. These loans are usually repaid gradually over a period of about 10 years or less, but in some cases may run for longer periods, the maximum being 20 years. The interest rates on these three types of loans are determined in various ways and therefore vary. The interest rate on commodity loans is the same as the discount rate charged by the Federal Intermediate Credit Banks. The rate on operating capital loans is 1 percent higher, while that on facility loans is the same as that on new loans being made by national farm-loan associations. On March 15, 1940, these rates were as follows: Commodity loans,

1½ percent; operating capital loans, 2½ percent; and facility loans 4 percent.

The banks for cooperatives are also organized on a cooperative basis. Each association borrowing from one of these banks owns stock in the bank equal to 5 percent of the loan, except in the case of commodity loans. Cooperatives organized under a statute which does not permit ownership of stock in institutions such as the banks for cooperatives subscribe to the guarantee fund of the bank instead of purchasing stock. The ownership of this stock entitles associations borrowing from the district banks for cooperatives to elect a member of the Farm Credit Board of the district which serves as the board of directors for the bank for cooperatives as well as the Federal Land Bank, Federal Intermediate Credit Bank, and production-credit corporation.

A total of 6,868 cooperative marketing, purchasing, and business-service associations have borrowed $491,000,000 from the banks for cooperatives since they were organized, $76,000,000 of which was outstanding on January 1, 1940. On the basis of information available, it is estimated that farmer-cooperative associations obtain approximately one quarter of their credit from the banks for cooperatives.

The Cooperative Research and Service Division of the Farm Credit Administration is charged with the responsibility under various acts of Congress of assisting cooperatives in solving their problems by carrying on research studies and disseminating information to them in regard to the results of such studies and the application of cooperative principles and practices to their organizations.

EMERGENCY FUNCTIONS

In addition to the permanent work of the Farm Credit Administration, certain emergency functions have been delegated to it. Emergency crop and feed loans are made to farmers who cannot obtain loans from any other source. These loans have been made from funds appropriated from time to time by Congress. At present such loans are being made under continuing authorization passed in 1937. Over the entire period in which emergency crop and feed loans have been made, approximately $376,000,000 has been advanced. In 1939, 143,000 farmers obtained such loans amounting to $15,000,000.

The Regional Agricultural Credit Corporations, originally established by the Reconstruction Finance Corporation to make emergency loans to farmers and stockmen for short periods, were placed in liquidation after the establishment of the production-credit associations which were organized to provide farmers and stockmen with a permanent source of such credit operating on a cooperative basis. The Corporations made loans totaling $327,000,000, of which 2.4 percent was outstanding on January 1, 1940.

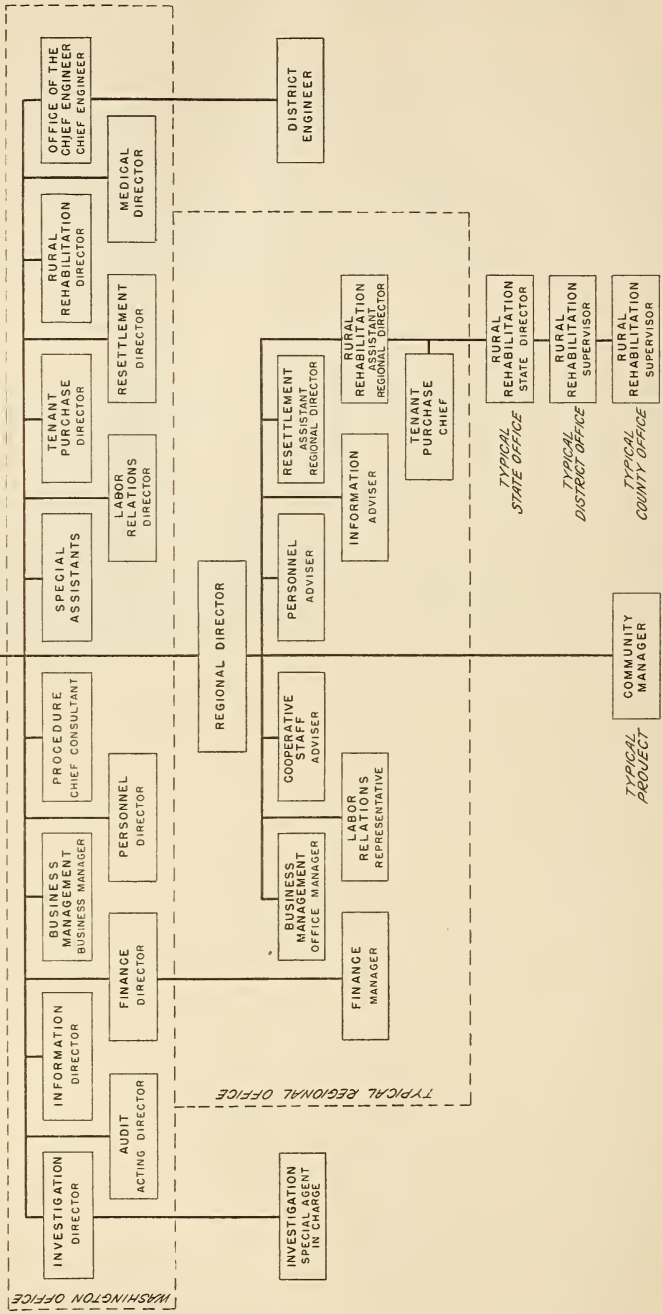
The Agricultural Marketing Act of June 15, 1929, authorized the establishment of a revolving fund of $500,000,000 for the use of the Federal Farm Board in making loans to farmer cooperative associations and stabilization corporations. However, lending operations from the fund were curtailed after the establishment of the banks for cooperatives. On January 1, 1940, $66,700,000 was outstanding to the Grain Stabilization Corporation now in dissolution, and the

remaining $20,500,000 of the $466,000,000 outstanding when the Farm Credit Administration took over the administration of the fund was outstanding to cooperative associations.

Eighty-eight joint-stock land banks were established between April 24, 1917, and July 1, 1931, under charters issued by the Farm Loan Board as provided in the original Farm Loan Act. These privately capitalized institutions were granted the power to make long-term amortized farm mortgage loans and to sell tax-exempt bonds to obtain funds for making such loans. These banks were placed in orderly liquidation at the direction of Congress in 1933. At that time the banks had gross assets of slightly less than one-half billion dollars. They have now liquidated approximately 70 percent of their assets and paid off 75 percent of their bonds.

FEDERAL CREDIT UNIONS

The Farm Credit Administration is also responsible for chartering and supervising the operations of Federal Credit Unions. While some farmer interest has been evidenced in this form of cooperative thrift and credit associations, the large majority of Federal Credit Unions have been organized by urban rather than rural groups. Credit unions offer an opportunity for groups of people having a common bond of interest to pool their savings and lend them on a cooperative basis to members who have a need for credit. There are now 3,197 active Federal Credit Unions operating in the United States. They have 860,000 members, assets of $47,000,000 and loans outstanding of $38,000,000.


FARM SECURITY ADMINISTRATION
ADMINISTRATOR
ASSISTANT ADMINISTRATORS
WASHINGTON OFFICE
INVESTIGATION
DIRECTOR
INFORMATION
DIRECTOR
AUDIT
ACTING DIRECTOR
FINANCE
DIRECTOR
BUSINESS
MANAGEMENT
BUSINESS MANAGER
PERSONNEL
DIRECTOR
PROCEDURE
CHIEF CONSULTANT
SPECIAL
ASSISTANTS
LABOR
RELATIONS
DIRECTOR
TENANT
PURCHASE
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RESETTLEMENT
DIRECTOR
RURAL
REHABILITATION
DIRECTOR
MEDICAL
DIRECTOR
OFFICE OF THE
CHIEF ENGINEER
CHIEF ENGINEER
DISTRICT
ENGINEER
REGIONAL DIRECTOR
TYPICAL REGIONAL OFFICE
INVESTIGATION
SPECIAL AGENT
IN CHARGE
FINANCE
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PROJECT
COMMUNITY
MANAGER
TYPICAL
STATE OFFICE
RURAL
REHABILITATION
STATE DIRECTOR
TYPICAL
DISTRICT OFFICE
RURAL
REHABILITATION
SUPERVISOR
TYPICAL
COUNTY OFFICE
RURAL
REHABILITATION
SUPERVISOR

FARM SECURITY ADMINISTRATION

The Farm Security Administration aids low-income farm families to reestablish themselves on productive land and to become self-supporting, through a threefold program of rural rehabilitation, farm purchase by tenants, and rural homestead.

This program was initiated by various Government agencies, but was consolidated under the Resettlement Administration by Executive order on April 30, 1935. The Resettlement Administration was set up as an independent agency, but was transferred to the Department of Agriculture by an Executive order on January 1, 1937. On September 1, 1937, it was succeeded by the Farm Security Administration which was charged with carrying out some of the purposes of the Bankhead-Jones Farm Tenant Act.

Rural rehabilitation and establishment of low-income farmers in homesteads were the chief functions of the Resettlement Administration and have continued to be the major activities of the Farm Security Administration. In addition with the passage of the Bankhead-Jones Farm Tenant Act, provision is now being made for loans to help a limited number of competent tenants, sharecroppers, and farm laborers to purchase their own farms.

RURAL REHABILITATION

Through rural rehabilitation, the low-income farmer who cannot obtain adequate credit elsewhere receives a small loan, coupled with training in sound farming practices. The size of the loans varies with the type of agriculture in each area, but they have averaged approximately $300 each. They are repayable over a period from 1 to 10 years at 5 percent interest. These loans finance the purchase of livestock, seed, fertilizer, feed, tools, household equipment, and food and clothing necessary to make a crop.

To make the most of his new start, each farmer who accepts a loan agrees to follow a scientific farm-and-home-management plan. Such a plan calls for the raising of enough vegetables and livestock to meet the family's subsistence needs. Acreage is set aside for necessary feeds crops, and the rest of the farm is devoted to diversified cash crops. This plan, worked out in close cooperation between the farmer and the county rehabilitation supervisor, is closely coordinated with the work of the Extension Service and other agencies of the Department of Agriculture.

Debt-ridden farmers are given another kind of help by voluntary farm-debt-adjustment committees. Paid only for their actual out-of-pocket expenses, these committees, composed of local businessmen and farmers, endeavor to scale down the debts of burdened farmers within their ability to pay. Adjustments between debtor and creditor have proved beneficial to both. The farmer is placed in a better position to meet his obligations and, at the same time, to carry on successful farming operations; the creditor collects on loans which might have been hopelessly frozen assets.

Since tenants with short-term leases have only a transitory interest in the land they cultivate and are unable to follow a sound, long-time farming program, the rehabilitation program includes the encouragement of improved leasing arrangements, which give the farmer stability and allow for the maturing of the farm plan.

FARM TENANT PURCHASE

Short-term leases, which often mean a gradual impoverishment of landlords, tenants, and the land itself are only one phase of the tenancy problem. More fundamental is the increasingly high rate of tenancy.

As one approach to the problem, Congress passed the Bankhead-Jones Farm Tenant Act, and the Farm Security Administration was designated to carry out some of its provisions. Title I of this act provides for loans to a limited number of tenants, sharecroppers, and farm laborers for the purchase of their own land.

Funds were allotted to each State and Territory on the basis of farm population and the prevalence of farm tenancy. For the first fiscal year, $10,000,000 was appropriated for distribution in about 300 counties. For the second fiscal year (July 1938, to July 1939) $25,000,000 was appropriated for loans for the purchase of farms. The number of counties in which these funds were loaned was increased to approximately 700. An appropriation of $40,000,000 for the fiscal year 1940 made possible about 7,000 loans in 1,300 counties.

County committees of three members certify applicants whose character, ability, and experience qualify them for carrying out successfully the obligations assumed with the purchase of a farm. The selected tenant families buy farms of their own choice which can be operated by the farmer's own labor and that of his family. Loans are approved only for farms good enough to yield sufficient income to support the family satisfactorily, and to produce enough surplus to pay off the loan. The county supervisor helps borrowers to maintain the productivity of their land by cooperating with them in working out sound farm-management plans.

HOMESTEADS

Rural and suburban homestead projects constitute the third phase of the Farm Security Administration's program.

One of the chief purposes of the majority of the rural projects is to demonstrate how low-income tenant farmers under proper supervision can obtain a higher standard of living by adopting the best farm practices now in use throughout the country, using good land, and proper equipment and organization.

Sometimes the farms are scattered throughout established farming communities and are developed separately. Frequently, however, the farms lie close together and the families lower production costs by group purchases of equipment and supplies and the joint use of tractors, combines, and other expensive facilities. In a few communities they own and work their farms cooperatively.

In all cases the families follow farm plans that outline their work in advance, call for the raising of most of their own food and feed, provide for a cash income from more than one source, and utilize soil-conserving measures. For the first few years most of the fam-

ilies rent their farms, and when they have proved their capacity for farm ownership they are given an opportunity to buy. Payments are extended over a period of 40 years. If necessary the Government lends the families the funds for the purchase of the essential tools and equipment.

Three suburban projects have been developed to demonstrate proper suburban land use, furnish work relief, and provide adequate housing for low-income workers. They provide homes for approximately 2,300 families.

GRANTS

In some cases where conditions make rehabilitation loans impracticable the Farm Security Administration has made cash grants to farm families for emergency needs.

Usually these grants have gone to families stricken by flood, drought, or some other catastrophe, which precluded their making a crop, to prevent actual starvation and disease. Grants also are made to migrant farm families which have moved into new areas looking for work, but have not found it. In thousands of cases these families can find no work and yet are not eligible for other relief under current regulations.

ORGANIZATION

An administrator directs the activities of the Farm Security Administration. The principal divisions of the Administration include: Rehabilitation, Resettlement, Tenant Purchase, Chief Engineer's Office, Finance and Control, Information, Procedure, Investigation, Business Management, Personnel, Labor Relations, Audit, and the Office of the Administrator.

Twelve regional offices have been established throughout the United States to cope with the problems of particular areas and to decentralize administration. The various counties are in the charge of a rehabilitation supervisor and home management supervisor.

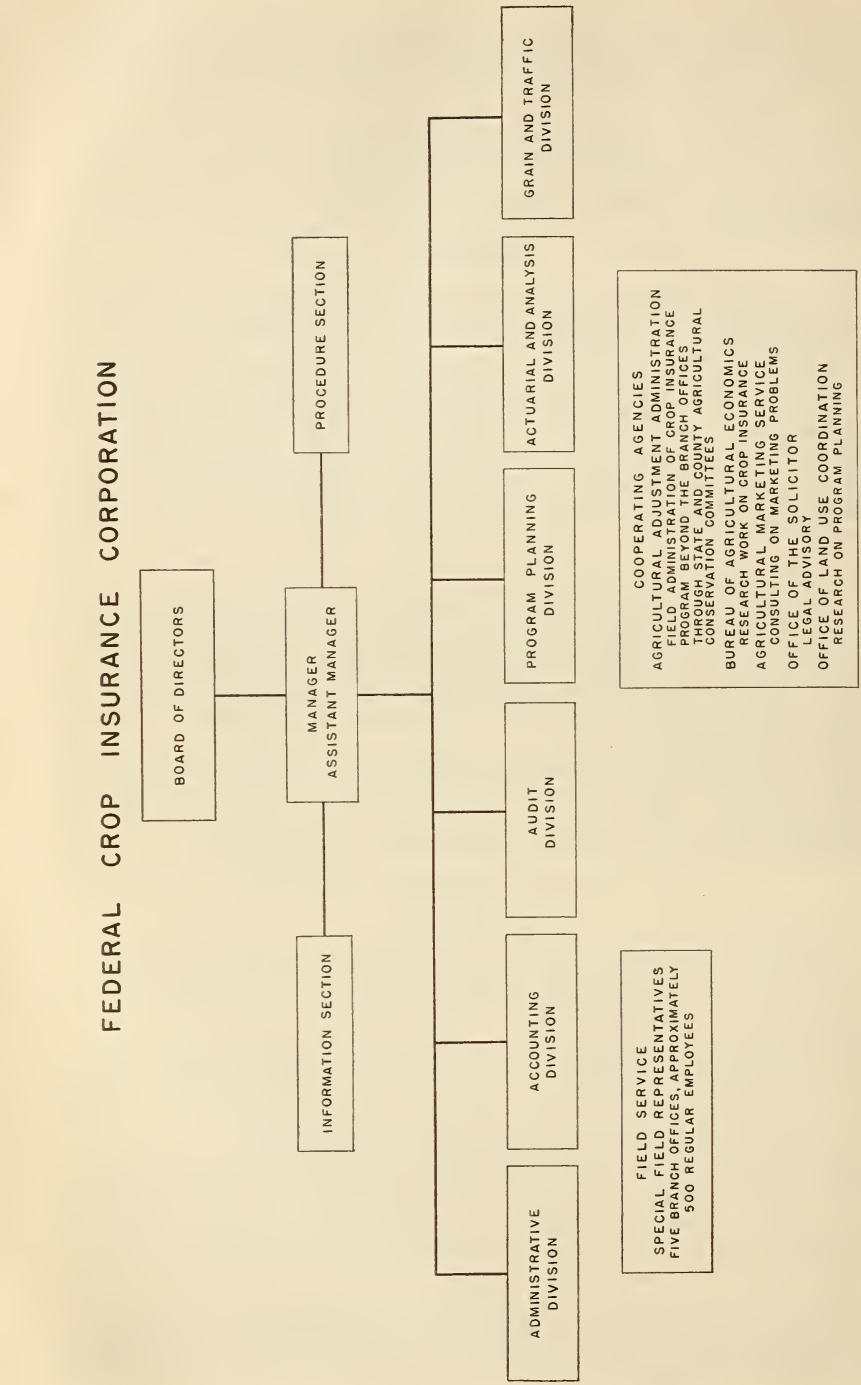
COOPERATION WITH OTHER AGENCIES

Activities of the Farm Security Administration are integrated with the work of other bureaus such as the Bureau of Agricultural Economics, Extension Service, Agricultural Adjustment Administration, and Soil Conservation Service.

Since erosion of soil has been one of the major causes of the poverty of low-income farm families, a soil-building program has been essential to the successful operation of the Administration's work. The Soil Conservation Service has aided rural supervisors by advising them and the rehabilitated families of good soil practices.

The Extension Service has worked with the Administration's county supervisors in advising rehabilitated families on the suitability of crops for a particular region, or on farm-management practices. This agency has also made soil tests and conducted home demonstration work for these families.

The Forest Service, the Land Utilization Division of the Bureau of Agricultural Economics, the Agricultural Adjustment Administration, and other agencies have cooperated in other phases of the Farm Security Administration programs.


FEDERAL CROP INSURANCE CORPORATION
BOARD OF DIRECTORS
MANAGER
ASSISTANT MANAGER
PROCEDURE SECTION
INFORMATION SECTION
ADMINISTRATIVE DIVISION
ACCOUNTING DIVISION
AUDIT DIVISION
PROGRAM PLANNING DIVISION
ACTUARIAL AND ANALYSIS DIVISION
GRAIN AND TRAFFIC DIVISION
FIELD SERVICE
SPECIAL FIELD REPRESENTATIVES
FIVE BRANCH OFFICES, APPROXIMATELY
500 REGULAR EMPLOYEES
COOPERATING AGENCIES
AGRICULTURAL ADJUSTMENT ADMINISTRATION
FIELD ADMINISTRATION OF CROP INSURANCE PROGRAM BEYOND THE BRANCH OFFICES THROUGH STATE AND COUNTY AGRICULTURAL CONSERVATION COMMITTEES
BUREAU OF AGRICULTURAL ECONOMICS
RESEARCH WORK ON CROP INSURANCE
AGRICULTURAL MARKETING SERVICE
CONSULTING ON MARKETING PROBLEMS
OFFICE OF THE SOLICITOR
LEGAL ADVISORY
OFFICE OF LAND USE COORDINATION
RESEARCH ON PROGRAM PLANNING

FEDERAL CROP INSURANCE CORPORATION

The Federal Crop Insurance Corporation, created by act of Congress, February 16, 1938, is responsible for administering the Federal Crop Insurance Program.

Under the wheat crop insurance program, growers may obtain policies which insure either 75 or 50 percent of their full average yield. The farmer may select either amount of coverage, except in specific cases in which the amount of insurance is limited to 50 percent of the average yield. The protection offered by the policy is "all-risk"—that is, it applies to the crop from the time it is seeded until it is threshed, against loss in yield from such unavoidable hazards as drought, flood, hail, wind, frost, winter-kill, animal pests, plant diseases, and insects.

The act was not passed until Congress had considered several crop-insurance plans during the 2 years prior to the passage of the present act, and likewise not until 16 years had elapsed since the Department of Agriculture issued its first official investigations on the practicability of insuring growers against crop failures.

The original studies were started before 1922 and continued intermittently up to 1936. A series of years of crop failures and low prices in the early thirties increased the demand for further studies as to the practicability of crop insurance. Yields of most crops for several years prior to 1933 were above normal, and the low prices associated with these high yields were followed by a series of years of higher prices in which farmers in some sections had no crops to sell at these higher prices. This created a demand for some type of an ever-normal-granary program that would return to the growers a given yield per acre in years of crop failures. The present crop-insurance program was created as a result of this demand.

A study of the experience of companies that insure farm crops revealed the fact that low prices were the main reason for the financial failure of insurance companies of this type. The crop-insurance programs of these companies featured an insurance plan which guaranteed not a certain yield but a certain income per acre which is the product of price times yield, and is thus price as well as yield insurance. In order to eliminate the price hazard, the present plan was adopted which insures only yield per acre and in no way insures the price of the commodity. Furthermore, to avoid payment for losses caused by poor or careless farming methods, this yield guaranteed or insured by the Corporation is not the full average yield but is either 50 or 75 percent of the average yield at the option of the insured. Accordingly the premium is reduced from what it would be to insure the full average yield.

PLAN OF ORGANIZATION

The Federal Crop Insurance Corporation is an agency of and within the Department of Agriculture, with headquarters in Washington, D. C. It is governed by a board of directors of 3 persons within the Department of Agriculture, who are appointed by and subject to removal by the Secretary of Agriculture. It has 5 branch offices. State and county activities are administered through State and county agricultural conservation committees of the Agricultural Adjustment Administration. At present it operates in about 1,200 counties.

The personnel of approximately 135 persons in the Washington office includes executives, administrative officers, and the necessary clerical staff to administer the program efficiently. The five branch offices, located in Kansas City, Mo.; Minneapolis, Minn.; Spokane, Wash.; Indianapolis, Ind.; and Washington, D. C., include a personnel of approximately 700 persons made up of administrative officers, commodity experts, accountants, auditors, and the necessary clerical staff to administer the program.

The branch offices review yield data submitted for farms and approve the yields and premium rates based thereon, receive premium payments in kind or cash equivalent thereof, maintain premium payments in the form of the stored agricultural commodity, and pay indemnities to the growers.

The field operations in the States are administered under the supervision of the State committee of the agricultural conservation program. The number of personnel in each State office varies with the number of potential crop-insurance policies in that State. In most of the major agricultural States, the State committee appoints a State crop insurance supervisor, and, in some States, also an assistant supervisor. The number of personnel, principally clerical, varies seasonably with the seeding and harvesting of the crop. County personnel consists of a county supervisor in the larger agricultural counties in the United States, assisted by part-time clerical assistants in most cases. The county personnel is maintained on a per diem status since field work is seasonal. The county administration is under the supervision of the county agricultural conservation committee.

Four other agencies besides the Agricultural Adjustment Administration cooperate with the Federal Crop Insurance Corporation in administering the crop-insurance program. Research in crop insurance with special emphasis on the actuarial phase is conducted by an agricultural insurance unit in the Division of Agricultural Finance of the Bureau of Agricultural Economics. The legal phase is supervised by the Office of the Solicitor. Information for specific data in regard to yields and prices is obtained and assembled by the Division of Crop and Livestock Estimates of the Agricultural Marketing Service.

PLAN OF OPERATION

The field force in the various States and counties is under the supervision of the State committees of the Agricultural Adjustment Administration. The establishment of yields and premium rates for every wheat farm in the United States, the taking of applications, and receiving of premiums or the cash equivalent thereof, and the adjusting of

losses, are duties performed in the county, subject to the approval of the Corporation. The State office checks the rate structure as established in the county, supervises county administration, prepares policies, maintains contact with the branch and Washington offices of the Corporation, administratively approves loss claims submitted by the county committee, and adjusts losses when county adjuster and policyholder are not in agreement on the amount of loss.

Premiums paid in by insuring farmers are placed by the Corporation in an insurance reserve, consisting of the actual commodity in storage. This reserve is built up as premiums are paid in, and is reduced only as indemnities are withdrawn to pay losses incurred by insured growers.

Growers who suffer loss to an insured crop may withdraw insurance payments, or indemnities from the reserve sufficient to make their total production equal the insured amount. Growers may receive their insurance indemnities either in the form of a warehouse receipt, or in the cash equivalent thereof, upon sale of the indemnities in kind by the Corporation. The Corporation is empowered to sell reserves only to pay indemnities in the cash equivalent thereof.

The law creating the Federal Crop Insurance Corporation authorized a capital stock of $100,000,000 of which $20,000,000 was subscribed for by the United States during the fiscal year 1939. Although the plan is set up on an actuarial basis under which premiums paid in and indemnities paid out should balance over a period of years, it is possible that in any one year, because of excessive crop losses, indemnities may exceed premiums. In such an event, the capital so provided is to act as a "balancing" fund to augment the actual wheat reserves provided from premium payments.

PROCEDURE IN INSURING A CROP

Insurance policies are written to insure but one crop year at a time, but a deposit not to exceed the current year's premium may be accepted by the Corporation for the succeeding year's premium.

To obtain crop insurance, the grower applies at the county A. A. A. office for crop insurance some time prior to the seeding of the crop, and within dates set by the Corporation. Every grower has previously been asked for his approval of the adjusted average yield and premium rates established for his farm. The grower who wishes to insure his crop must pay the premium for the number of acres he intends to seed before seeding the crop. Soon after planting the crop, the grower gives a written statement to the Corporation as to the acreage actually seeded, and in case the seeded acreage differs from that in the application, he pays any additional premium necessary or is refunded any excess premium paid. If, at any time after seeding it appears there is a payable loss on the crop, the grower notifies the county agricultural conservation committee, and an adjustment is made. This amount of indemnity to which the grower is entitled is determined by deducting the actual or appraised production or a combination of the two from the insured production as specified in the policy. Indemnities, if not paid in kind, will be paid in the cash equivalent, as of the date the adjuster signs the adjustment agreement, and on the basis of the local price as determined by the Corporation. All claims of indemnities are approved by the adjuster, county and State committees, and then sent to the branch office for final approval and payment direct to the grower.

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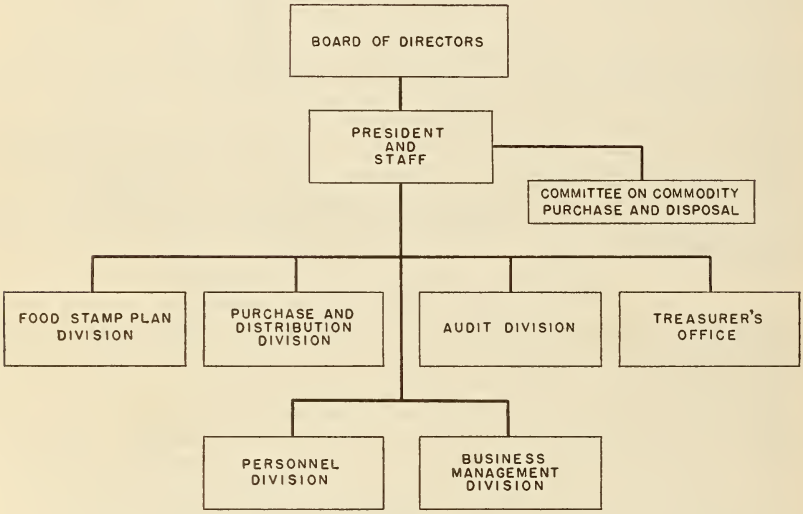
FEDERAL SURPLUS COMMODITIES CORPORATION



FEDERAL SURPLUS COMMODITIES CORPORATION

Programs designed to remove agricultural surpluses through increased consumption among relief and low-income groups as well as certain types of export programs, developed by the Division of Marketing and Marketing Agreements, are carried out largely by the Federal Surplus Commodities Corporation. The Corporation is a nonprofit, membership corporation without capital stock, organized October 4, 1933, under the laws of Delaware as the Federal Surplus Relief Corporation. The name of the organization was changed to the Federal Surplus Commodities Corporation November 18, 1935. Members are the Secretary of Agriculture, the Under Secretary of Agriculture, and the Assistant Secretary of Agriculture. Funds made available to the Secretary of Agriculture by section 32, Public, No. 320, approved August 24, 1935, and additional funds appropriated by Congress, are transferred to the Corporation from time to time to enable it to carry out these programs.

The major functions of the Corporation deal with the removal of acute surpluses of farm commodities from regular channels of trade to assist the farmer, and to provide a more adequate diet to needy persons who lack the necessary purchasing power.

When surpluses of farm commodities, created by one cause or another, clog regular market channels, the price the farmer receives for his products is adversely affected. The removal of such surpluses stimulates and improves the farmer's market, while distribution to the needy either directly or through the food stamp plan, encourages consumption of the commodities among families who lack the means to buy them at all or to buy them in adequate quantities.

One of the major causes of farm surpluses has been the reduction of export markets since the World War. Many foreign countries, in their efforts to become self-sufficient, have subsidized domestic production, have raised trade barriers, or have encouraged the use of substitutes for commodities previously imported from this country. To meet this situation the Department's wheat and flour export programs, for example, are designed primarily to maintain for the farmer of the United States his share of world trade in these products.

All surplus-removal operations undertaken by the Federal Surplus Commodities Corporation are authorized by the Secretary of Agriculture. The Corporation is not an isolated agency. Its activities and objectives are directed by the Department of Agriculture. Surplus-removal and export programs supplement the efforts of farmers and those being made by the Department through soil conservation, production adjustment, commodity loan, ever-normal granary, and marketing-agreement programs which commonly seek the stabilization of markets and prices, the improvement of agricultural income, and the providing of adequate supplies of agricultural products.

The Corporation's direct-purchase programs deal chiefly with temporary or seasonal surpluses which may be occasioned by unusually favorable growing conditions, by the overlapping of marketing seasons of competitive areas, or by other conditions beyond control. Under such circumstances producers frequently are forced to market all of their products in a very short space of time. The result is disastrous to the market and to its price structure. In these cases surplus purchase programs can be used as a means to prevent the physical and economic wastes that frequently follow disorderly marketing and overburdened markets.

Under less stringent circumstances surplus-purchase programs may be used to supplement the efforts being made to regulate the flow of supplies to market under marketing agreements or other cooperative endeavor.

DEVELOPMENT OF SURPLUS REMOVAL PROGRAMS

Surplus agricultural commodities are purchased by the Corporation at the direction of the Secretary of Agriculture following a determination that an adverse condition exists and that a purchase program would help to correct the condition. In making the determination the Secretary is assisted by the Division of Marketing and Marketing Agreements which makes recommendations based upon economic analyses of the commodity in question. The surplus supplies bought by the Corporation under purchase programs are given to State welfare agencies for direct distribution to families on relief. The foodstuffs thus supplied to these families are in addition to the various forms of relief they receive from other sources.

Since purchase programs seek better returns to growers through the improvement of marketing conditions, this end is served by the purchase of only that portion of a crop which is depressively influencing the price and the marketing of the entire crop. The objective is to increase grower returns on the entire crop, not merely to increase returns by the value of the commodities bought by the Corporation.

Surplus-purchase programs frequently gain initial impetus from the producers or handlers of a commodity, who request aid in meeting the situation from the Division of Marketing and Marketing Agreements. Similarly alert in reporting surpluses are grower and handler committees which administer various marketing-agreement programs. Occasionally there is assurance of an inevitable surplus before a crop matures. In such instances crop and market conditions are watched closely by the Division so that a program may be ready for operation as soon as a surplus develops. Field representatives of the Division and the Corporation keep abreast of current conditions and the progress of programs. These reports, together with economic studies, guide the policies of the Corporation.

Unlike the above-described method of direct purchase and distribution of surplus commodities, the food stamp plan carried on by the Federal Surplus Commodities Corporation is a way of dealing with the problem of farm surpluses through use of established trade channels. Under the food stamp plan increased buying power in the form of blue surplus-food-order stamps is given to those eligible for public aid. The blue stamps are good only in exchange for

commodities designated by the Secretary of Agriculture as being in surplus. These surplus commodities are obtained with the blue stamps through regular commercial channels in any food store in the cities in which the plan operates. Retail food dealers who accept the food stamps in payment for the surplus foods may redeem them at face value.

Launched experimentally in Rochester, N. Y., early in 1939, the plan was encouragingly successful. Before midsummer it had been extended experimentally to include several other cities of the United States and to one county in Oklahoma where it provided eligible families in low-income groups with additional purchasing power.

Participation in the plan is entirely voluntary. The heads of families eligible to receive aid in this form are given an opportunity to request that they be included in the plan.

Generally, under the plan, those who take part are given free a blue surplus-food stamp for each two orange-colored stamps they buy. Each stamp has a value of 25 cents. The orange-colored stamps are used to require the continuation of normal food purchases by a family, while the blue stamps can be used as purchasing power for a supply of food in addition to that normally purchased. By the end of the summer of 1939 studies of the experimental operation of the stamp plan in Rochester and the other test cities had shown results that warranted extension of the plan to other cities. It was shown that the plan was working well mechanically, that eligible people were participating in increasing numbers, that the participants were receiving not only a more adequate but also a better balanced diet, that food sales had increased beyond the amount represented by the blue-stamp purchases, and that there were few cases of violations of the regulations.

No accurate measurement of the assistance to the agricultural industry of the various surplus-removal programs is possible without knowledge of what would have happened if there had been no such activities. It is possible to evaluate the results only through those indications which provide evidence of actual benefit. In some cases these indications of result are made manifest by a rise in grower prices, by an increase in the quantity of commodities moving into consuming channels, and by steady, normally operating markets following a period of sharp decline. In these instances it is not assumed that surplus-removal activities of the Corporation are the sole or governing factors, but examples are sufficiently numerous to indicate conclusively that definite benefit accrues to the grower through these programs.

Surplus-removal programs have shown the grower and the handler of agricultural commodities that the problem of surplus can be met by cooperative action. The programs have helped them to realize that surplus problems are problems of the agricultural industry and not merely those of individuals. Cooperative action and the formulation of marketing-agreement programs have been encouraged through the experience which growers and handlers have had with surplus-purchase operations. In some areas the Corporation's purchases have introduced and have shown the advantage of grading and inspection of agricultural commodities, for the first time.

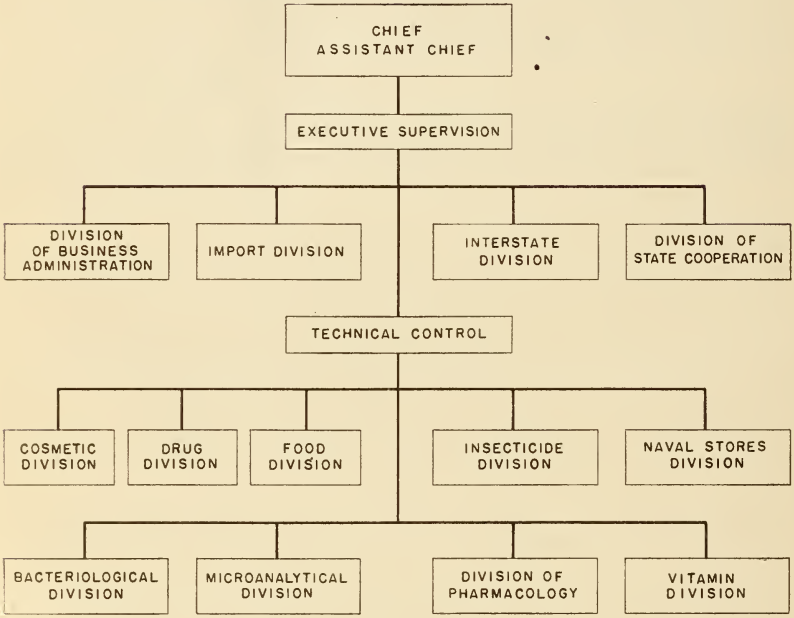
Surplus-removal programs are not operated so as to result in high prices to consumers. In the first place these programs are undertaken

when prices are unreasonably low and it is ordinarily impossible to remove a sufficient quantity to affect materially consumers' prices. Furthermore, the fact that growers receive for many commodities only a small percentage of what the consumer pays frequently means that substantial gains to producers have no appreciable effect on the prices paid by consumers.

Frequently, improved marketing conditions, as the result of surplus removal, reduce wholesalers' risks and handling costs to a point where increased grower prices can be absorbed and not passed on to the consumer. Another beneficial effect of the programs, from the consumer's viewpoint, is the encouragement of a steady flow of products to market. An orderly market in which there is constant supply at a reasonable price is preferable to a market subject to violent fluctuation in supply and price. With orderly markets go reduced handling costs and risks on the part of the wholesaler and retailer, with consequent benefit to the consumer.

Perhaps the most vital purposes surplus-removal programs have served are those of supplying each month nearly 3 million families on relief in the United States with a part of the food they have needed for a more adequate diet.

FOOD AND DRUG ADMINISTRATION



FIELD SERVICE

ABOUT 600 FIELD EMPLOYEES: 3 DISTRICTS WITH 16 STATIONS AND RESIDENT INSPECTORS AT 16 OTHER KEY CITIES; 5 TESTING STATIONS FOR INSECTICIDE CONTROL; 5 NAVAL STORES CONTROL POINTS

FOOD AND DRUG ADMINISTRATION

The Food and Drug Administration, organized July 1, 1927, was created by Congress on the recommendation of the Secretary of Agriculture for the purpose of enforcing six specific statutes. Subsequently a seventh statute was assigned to it for enforcement. These acts are designed in general to promote the purity and truthful labeling of foods, drugs, cosmetics, insecticides, and certain other commodities. The Administration maintains analytical laboratories and testing stations at convenient places throughout the country and research laboratories in Washington for the purpose of procuring the scientific data and developing the analytical methods essential to proper enforcement. Inspectors, whose duties include the collection of samples and evidence, the inspection of manufacturing plants, and the uncovering of violations of the laws wherever they occur, make their headquarters at the various laboratory points. In the application of the various laws the Administration has the assistance of the Solicitor of the Department of Agriculture and officers of the Department of Justice.

LAWS ASSIGNED TO THE ADMINISTRATION

The Federal Food, Drug, and Cosmetic Act was enacted on June 25, 1938, in recognition of the need of a modernized statute to replace the Food and Drugs Act of 1906, commonly called the pure food law. The new law retains all of the meritorious features of the old, in prohibiting commerce in adulterated and misbranded manufactured and natural foods, beverages, stock feeds, drugs, and medicines, and affords many additional elements of public protection. For example, it brings all cosmetics except toilet soap under control; outlaws cosmetics which may be injurious to users, except poisonous coal-tar hair dyes which bear warning labels; prohibits false or misleading labeling on these commodities; brings under control drugs used in the diagnosis of disease, and drugs intended to affect the structure or any function of the body; and subjects therapeutic devices to the same general requirements that apply to drugs. The control exercised over foods and drugs is very materially extended. Important new provisions are made for public protection through outlawing or controlling products which may be injurious to health, for the use of warning labels where these are necessary, for the employment of fully informative labeling not required under the old law, for the establishment of a definition and standard of identity and a reasonable standard of quality and fill of container for each food, and through the provision of penalties for violations commensurate with the gravity of the offenses. The Federal Food, Drug, and Cosmetic Act supplanted the act of 1906 on June 25, 1939, with the exception of certain label provisions, postponed by amendment of the act until January 1, 1940,

with authority conferred upon the Secretary of Agriculture in certain specified cases for a further postponement until July 1, 1940.

The Insecticide Act, passed in 1910, aims to protect farmers, fruit growers, stock and poultry raisers, and others from insecticides, fungicides, and disinfectants that fall below the strength claimed for them, that will not accomplish the results promised, or that are injurious to plants or animals. The Import Milk Act prohibits the entry into the United States of milk or cream that has not been produced under prescribed sanitary conditions from healthy herds or that does not meet certain specified standards at time of entry. The Caustic Poison Act, by requiring certain labeling, aims to safeguard the household against accidental injury from ammonia, lye, carbolic acid, and other dangerous compounds commonly used in the home. The Naval Stores Act applies to rosin and turpentine used in the manufacture of paints, varnishes, and other commodities. The Tea Act provides for the examination of all tea offered for entry into the United States and the admission of only such tea as meets the standards of quality, purity, and fitness for consumption set by the Government. The Filled Milk Act, approved March 4, 1923, was by amendment of August 27, 1935, placed under the direction of the Secretary of Agriculture, and by him assigned to the Food and Drug Administration for enforcement. This statute prohibits the shipment in interstate or foreign commerce of so-called filled milk, made by removing butterfat from evaporated milk and substituting other fats so as to make a product simulating evaporated milk.

PLAN OF ORGANIZATION

The personnel of approximately 900 includes administrative officers, chemists, bacteriologists, physicians, veterinarians, entomologists, pharmacologists, microscopists, plant pathologists, inspectors, and other specialists, with the necessary complement of clerks and helpers. Food and drug inspection stations, manned by specialists, are maintained in 16 commercial cities of the United States, and resident inspectors are stationed at 16 others, to supervise interstate and foreign commerce in foods, drugs, cosmetics, insecticides, fungicides, naval stores, and caustic poisons. Five testing stations for insecticides and fungicides subject to the Insecticide Act and 5 field offices for naval stores inspection are also maintained. Each food and drug inspection station is responsible for seeing that the 7 acts enforced by the Food and Drug Administration are complied with by the manufacturers, dealers, and importers who trade within the territory assigned to that station. The station territories, covering the entire United States, are organized into an eastern, a central, and a western district, with headquarters, respectively, in New York, Chicago, and San Francisco. A responsible administrative officer directs the work of each district.

The Washington staff, consisting of approximately 300, is organized into executive supervisory offices and technical control laboratories to administer the various acts, to recommend methods for attacking regulatory problems, to conduct necessary investigations, and to solve the more difficult technological problems. At the head of the organization are the Chief and the Assistant Chief, who direct and coordinate the work in Washington and throughout the entire country.

PLAN OF OPERATION

To supervise effectively the enormous traffic in foods, drugs, cosmetics, insecticides, caustic poisons, and naval stores throughout the entire United States with a staff necessarily limited, it is essential that a very definite plan of operation for all seven acts be formulated and carried out.

The great majority of manufacturers desire to put out good products, truthfully labeled. A few, however, are quick to take advantage of every chemical advance that can be adapted to the debasement of foods, drugs, and other products without detection by usual methods. This taxes the ingenuity of regulatory chemists to develop new methods for the detection of these adulterations. It is a continuing contest, for as soon as a new form of adulteration can be exposed by methods satisfactory to the courts, that particular type of violation is abandoned, at least temporarily.

If the manufacturers who put out illegal products can be segregated, it is possible to center attention upon these concerns and supervise their operations effectively. Accordingly, very thoroughgoing factory inspections are made and data collected which indicate the nature of the practices and products of the manufacturing concerns whose goods come within the jurisdiction of the acts enforced. A program of work is developed that aims to insure that the major attention shall be given to the most flagrant abuses. This enables all districts and stations to work toward a common object which will bring the maximum of protection to consumers.

PROCEDURE FOR CORRECTING VIOLATIONS

In applying the import sections of the various acts enforced, close inspection is maintained at ports. Products that do not meet the requirements of the acts are denied entry into the United States. In the enforcement of the acts in their application to interstate commerce, adulterated and misbranded products may be seized or persons responsible for the violations may be prosecuted, and after conviction may be fined and for repeated offenses may be imprisoned. The Food, Drug, and Cosmetic Act provides additional means of controlling illegal interstate traffic through injunction and emergency-permit control.

Notices of judgment giving the essential facts of seizure and criminal prosecution cases are prepared by the Solicitor and published by the Food and Drug Administration. The notices are not issued at specific intervals, but are published in groups of foods and of drugs after the termination of the cases in court. Persons wishing to receive notices of judgment may have their names placed on the mailing list for foods, drugs, and devices, or cosmetics by application to the Food and Drug Administration.

COOPERATION WITH STATE AND LOCAL AGENCIES

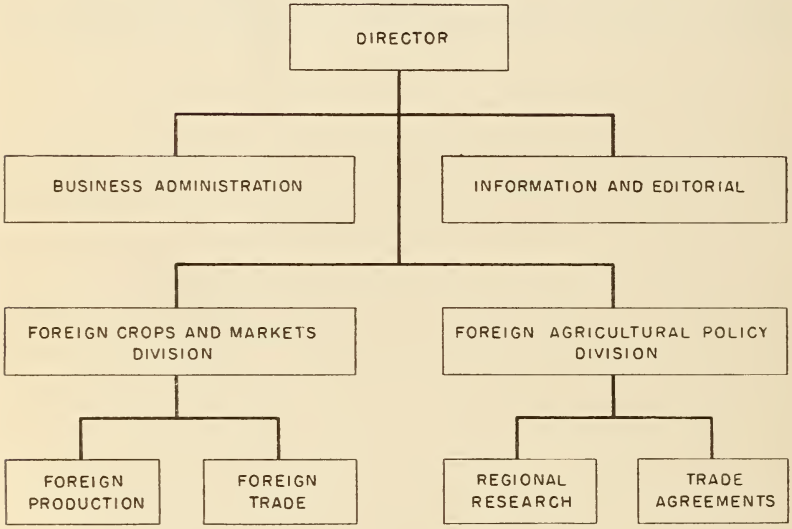
The Food and Drug Administration maintains a division for the sole purpose of promoting cooperation among Federal, State, and city food and drug control officials. These regulatory officials can frequently invoke the powers of State and local laws to remove of-

fending products from the market when they are beyond Federal jurisdiction. Their police powers also enable them, in many cases, to embargo interstate shipments pending Federal seizure action.

SEA-FOOD INSPECTION SERVICE

The sea-food amendment to the Food and Drugs Act, which is retained in the Food, Drug, and Cosmetic Act, authorizes the Secretary of Agriculture, on application of any packer of any sea food to be shipped within the jurisdiction of the law, to assign inspectors to the applicant's establishment to supervise packing operations. Sea foods packed under such Government inspection, which is continuous throughout their entire route from the sea to the consumer, must bear the legend "Production Supervised by the U. S. Food and Drug Administration." The amendment was sponsored by the shrimp canners, who immediately availed themselves of the service when it was inaugurated in 1934. At the end of 3½ years of operation about 95 percent of the shrimp produced bore the Federal inspection legend.

OFFICE OF FOREIGN AGRICULTURAL RELATIONS



OFFICE OF FOREIGN AGRICULTURAL RELATIONS

The primary interest of American agriculture in agricultural conditions in foreign countries arises from the fact that from 15 to 20 percent of the total cultivated crop area of approximately 360 million acres in the United States is producing foods, feeds, fibers, and tobacco which enter directly or indirectly into channels of world trade. The prosperity, not only of American agriculture but of practically all other industries in the United States as well, is influenced in no small degree by the ability of American farmers to dispose of their surpluses in world markets.

Work in connection with foreign agricultural developments was provided for by an act of Congress of June 5, 1930, establishing the Foreign Agricultural Service which became a Division of the Bureau of Agricultural Economics. On December 1, 1938, the Foreign Agricultural Service Division was given an independent status under the Secretary of Agriculture. Under Reorganization Plan No. 2, the field officers of the Foreign Agricultural Service were transferred to the Department of State. The Washington staff, however, together with the commodity specialists holding foreign assignments, was retained in the Department of Agriculture, and this personnel now constitutes the Office of Foreign Agricultural Relations.

A leading function of the Office is to study developments and trends abroad in agricultural production and consumption, in prices of farm products, in methods and cost of production and marketing, in the policies of foreign governments relative to agriculture and foreign trade in agricultural products, to analyze the significance of these developments to American agriculture, and to disseminate such information in respect thereto as will assist American farmers in adjusting their operations and practices to meet changing world conditions. A second important function is to coordinate the work of the Department of Agriculture in respect to problems and policies relating to foreign competition and demand and to advise the Secretary of Agriculture in respect thereto.

As to the first function, the Office of Foreign Agricultural Relations maintains close liaison with the Department of State with a view to assuring prompt and adequate reports from the Foreign Service of the United States on developments abroad of interest to various branches of the Department of Agriculture and to American agriculture generally. For the same reason, it maintains close liaison with the International Institute of Agriculture at Rome, with the official statistical and crop-reporting agencies of a number of foreign governments, and with many semiofficial and private agencies abroad conducting research and reporting in the same field.

In addition, the Office conducts specialized research and investigational work on the trends and potentialities of competitive foreign agricultural production, the factors influencing the marketing in

foreign countries of our agricultural surpluses, the nature and tendencies of foreign government policies affecting agricultural production and consumption, and on general economic conditions in foreign countries as they affect the demand for agricultural commodities. Such research and investigational work is conducted both by members of the Washington staff and by commodity specialists detailed from time to time to foreign posts. The economic fact-finding and fact-interpreting activities of the Office of Foreign Agricultural Relations supplement the information collected by the Department of Agriculture in the domestic field. Thus American farmers and business organizations handling farm products are not only kept informed of important developments abroad that affect their interests, but also are better able to anticipate future conditions and to adjust their activities accordingly.

It is also the function of the Office of Foreign Agricultural Relations to direct and coordinate the participation of the Department of Agriculture in the reciprocal trade agreement program. In the development of that program the Department of Agriculture has been required to provide representatives on the numerous interdepartmental committees which carry on the work. These representatives contribute to the statistical and other information on agricultural production, consumption, and trade needed for the preparation of the schedules in the individual trade agreements relating to concessions to be secured by the United States and to be granted by this country on agricultural products. The Office also follows and reports upon the actual operation of the trade agreements as reflected in our foreign trade in agricultural products.

In respect to the second function, the Office acts in a staff relationship to the Secretary of Agriculture in coordinating, either through the Department of State or directly, the relations of the Department of Agriculture with all other agencies of the Government of the United States, with foreign governments, and with private agencies, in matters relating to foreign trade in farm products. An important aspect of this part of the work concerns the participation of the Department of Agriculture in the general program of cooperation between the Government of the United States and the governments of the other American Republics under the terms of acts of Congress authorizing such cooperation.

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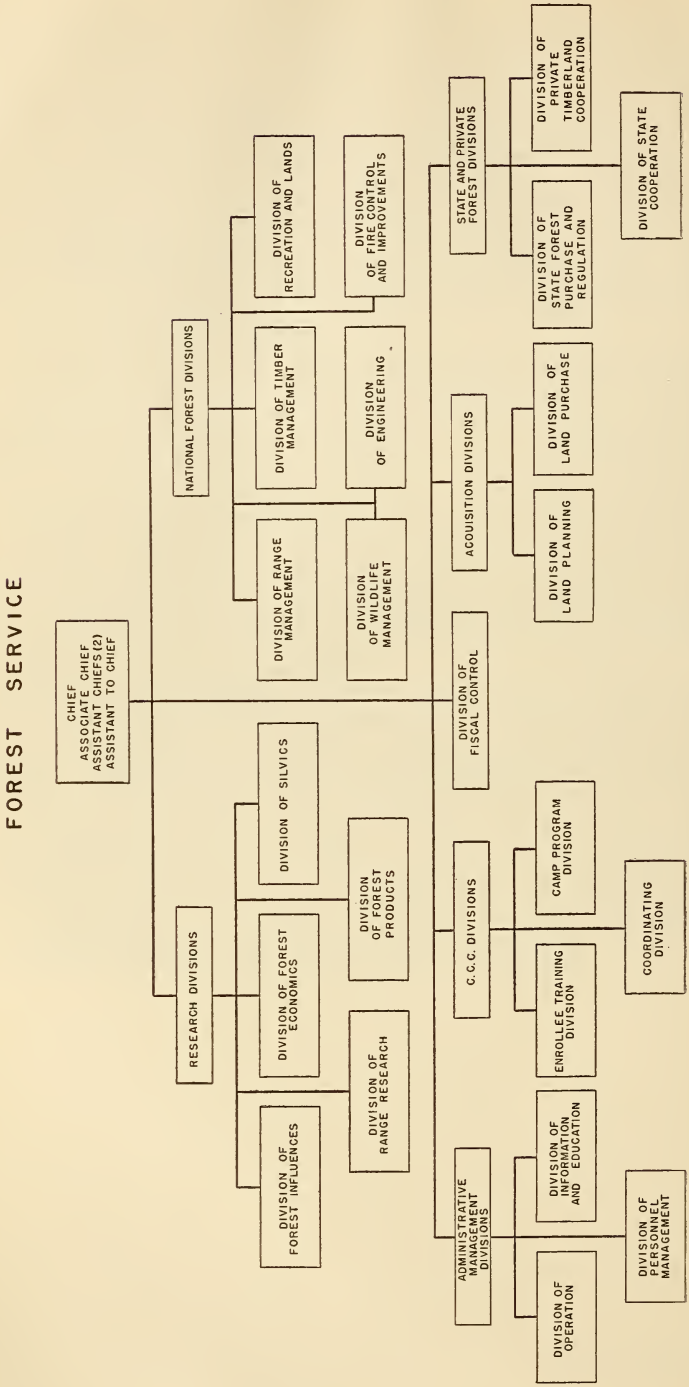

FOREST SERVICE
CHIEF
ASSOCIATE CHIEF
ASSISTANT CHIEFS (2)
ASSISTANT TO CHIEF
RESEARCH DIVISIONS
DIVISION OF FOREST INFLUENCES
DIVISION OF FOREST ECONOMICS
DIVISION OF SILVICS
DIVISION OF RANGE RESEARCH
DIVISION OF FOREST PRODUCTS
NATIONAL FOREST DIVISIONS
DIVISION OF RECREATION AND LANDS
DIVISION OF TIMBER MANAGEMENT
DIVISION OF RANGE MANAGEMENT
DIVISION OF WILDLIFE MANAGEMENT
DIVISION OF ENGINEERING
DIVISION OF FIRE CONTROL AND IMPROVEMENTS
DIVISION OF FISCAL CONTROL
ACQUISITION DIVISIONS
DIVISION OF LAND PLANNING
DIVISION OF LAND PURCHASE
STATE AND PRIVATE FOREST DIVISIONS
DIVISION OF STATE FOREST PLANTATIONS AND REGULATION
DIVISION OF PRIVATE TIMBERLAND COOPERATION
DIVISION OF STATE COOPERATION
C.C.C. DIVISIONS
CAMP PROGRAM DIVISION
ENROLLEE TRAINING DIVISION
COORDINATING DIVISION
ADMINISTRATIVE MANAGEMENT DIVISIONS
DIVISION OF OPERATION
DIVISION OF INFORMATION AND EDUCATION
DIVISION OF PERSONNEL MANAGEMENT

FOREST SERVICE

Forests help to prevent erosion and floods; they furnish forage for domestic livestock and big game, and provide recreation. Our forest lands total more than 630,000,000 acres. Forests give us building materials, fuel, rayons, sugars, naval stores, surgical absorbents, newsprint, fiber containers, furniture, and thousands of everyday things. Five to six million people are supported by forest-industry wages. Woodlands, the most extensive crop on American farms, provide materials and supplemental cash incomes to 2½ million farm families each year.

As sources of many products, and of much employment, forests are an essential part of our lives. The way forests are handled is vital to our social and economic structure. They contribute most to human welfare when they are treated as crops; in this way, instead of being mined, they are renewed as they are used. This, the purpose of forest conservation as a public policy, encompasses the broad responsibilities and duties of the Department's Forest Service.

Activities and responsibilities of the Forest Service are divided into four major groups: (1) To protect, develop, and administer the publicly owned national-forest system in the common interest; (2) to help correlate, coordinate, and apply broad action programs in the public welfare; (3) to encourage and help establish adequate protection and management on State and privately owned forest lands; (4) to conduct research in problems involving use, management, and renewal of forest and wild lands, and their resources.

Conservation of a sort is older in the United States than our Constitution. England's broad arrow marked trees reserved to help relieve "the great and pitiful waste" of American native woods. The need for forest conservation as a Federal responsibility was recognized in 1779 when Congress provided funds to purchase lands growing timber suitable for naval purposes; in 1820 when Federal reservations of public domain timberlands were made; in 1822 when the brig *Spark* was ordered to prevent timber thefts along certain coasts; and in 1828 when Federal forest planting was authorized. As iron and steel replaced oak for warships, early forest reservations were canceled; forest plantations were abandoned; and timber looting spread. Federal laws literally forced the best three-fourths of our commercially valuable forest lands into private ownership. Forest exploitation, the result in part of pressure for additional farms, everywhere increased.

In 1876 a special agent, appointed by the Department of Agriculture, began to study forest conditions. In 1881 the Department created a Division of Forestry. Congress authorized the President, in 1891, to set aside forest reserves. In 1897 it placed the administration of these reserves under the Secretary of the Interior, who requested experts of the Department of Agriculture to act as his advisors. In

1905 Congress transferred the task to the Department of Agriculture, and the Forest Service came into being. This agency has administered the national forests ever since, under decentralized and yet coordinated and correlated management.

In 40 States and 2 Territories, national forests now embrace more than 175 million acres, net. They help to support almost a million people, provide recreation to 30 million each year, and are home and refuge for big game. They include some 70,000 miles of fishing streams, and more than 3,500 developed public campgrounds. They furnish forage for more than 6.8 million livestock owned by 26,000 permittees, help to prevent floods and soil erosion, provide domestic water to 6 million people, and contain a public transportation system that includes more than 136,000 miles of highways and roads, and 155,000 miles of trails. The forest resources are used and renewed. Receipts of the Government in the fiscal year 1937 were $4,671,133, with $1,178,883 repaid to States.

Most national forests are in the 11 Western States and Alaska and were created from the public domain. The National Forest Reservation Commission has authorized purchases totaling some 16,000,000 acres, largely of cut-over forest land, east of the Mississippi River. Artificial reforestation, required on 13 percent of these lands, is progressing. With adequate protection, natural reproduction will establish itself on another 10 percent. Fifty-three percent bears young growth rapidly approaching merchantable sizes, and 24 percent already bears some timber of merchantable sizes. On lands largely exploited before the Government acquired them, forest rehabilitation is under way; actual and potential wealth is being increased.

Compared with those in the West, the eastern national forests are densely populated. One such area on the Piedmont Plateau embraces some 430,000 acres, and 3,000 families live there. For years 98 percent of all houses had leaky roofs; 95 percent had no screens; only 1 in 10 had a toilet of any kind. For years jobs were almost impossible to get; 7 people out of every 10 were undernourished; pellagra was widespread; and three-fourths of the women had some chronic disorder.

The area was originally well forested. Cropped from the start, timber could have provided continuous jobs for many people. Instead, it was gutted. Then came exploitive farming. This provided work for a time but eventually left the people desolate and forlorn. Yet the soil is forest soil still. Time after time new forest growth has sprung up, which has survived despite repeated clearings and fires.

Part of this area was purchased and added to a national forest. Forest restoration is under way in it. Telephone lines are being built and lookout towers erected. Fires are fewer; those that occur are more quickly put out. Dead and diseased trees, often a menace to growing forests, are removed and cut into cordwood. Young forest stands, some now properly thinned, already show increased growth. These things mean jobs, though not enough to go around. Already, however, there are solid foundation piers beneath many a forest dwelling, and glass and screens in formerly unprotected window openings. Lumber from unused buildings helps to repair steps and porches, and to build simple but sanitary toilets. Fewer roofs leak.

With help from State, county, and Federal agencies, pellagra is being overcome and other chronic ailments alleviated. With forest restoration, human rehabilitation in place is under way.

In other national forests, different solutions are being worked out. The experience gained and the results obtained are applicable in extensive areas. In 1,300 rural counties jobs are desperately needed, and undernourishment is common. Half of our farms are within these counties, and 60-odd percent of all land there is still forest land. Most of it has been exploited, yet most of it can still be rebuilt. Properly managed, most of it can produce continuous forest crops. In this way publicly financed forest rebuilding can provide worthwhile jobs and add to the wealth and well-being of the Nation.

Other major Forest Service action programs are: (1) Cooperation under the Clarke-McNary law with States for organized fire protection, which now covers some 252 million acres of State, community, and privately owned forest lands, and for raising and distributing forest trees, which in 1937 totaled more than 41 million, to be planted by farm and other private landowners; (2) cooperation with the Agricultural Adjustment Administration in connection with the technical and advisory phases of the range-conservation program, the examination of some 56 million acres of western range, and the administration of the naval stores conservation program, within some 65 million acres in the South, to help conserve forest resources and provide better yields; (3) cooperation with regional, State, and county boards in planning for better forest-land use; (4) cooperation with farmers to establish shelterbelts and farmstead plantations that help to fix shifting soils, prevent dust storms, and restore soil productivity; (5) cooperation with States under the Fulmer Act, so that acquisition of lands suitable for State forests may proceed without delay when funds are available.

National forests are valuable properties, but the best three-fourths of all our commercial forest land and 90 percent of all potential forest growth is in private ownership. In 1937 more than 1 billion feet board measure of national-forest timber was harvested under management, but 95 percent of the timber we use each year still comes from privately owned forest lands.

In the past, exploitation has been almost universal on private forest lands. The aftermath includes erosion and floods, silting of dams, rivers, and harbors; millions of unproductive and only partially productive acres; and human exploitation. In the Douglas fir region of the Pacific Northwest, for example, most private forest lands are, with respect to fire protection at least, left in better growing condition. In that part of the South covered by the forest survey, extensive forestry without sustained yield is now practiced on about one-fourth of the privately owned land.

All this is encouraging. It affords proof that, with public cooperation so far received, fire protection and relatively good forest practices can successfully be applied to private forest lands. These practices can replace exploitation and its aftermaths; bring added security and stability to families, communities, and industries; add to the public welfare; and at the same time afford current profits to private owners.

But what has been done is only a small part of what needs to be done. Only 50 percent of all cut-over land in the Northwest's Douglas fir region is satisfactorily restocked; if present output and prevailing cutting practices on private lands are continued there, old-growth fir in Washington, where wood-using industries support nearly half a million people, will be gone long before new growth can possibly be used for most of the things for which it has been and is still being used. In the South, where more industries and more labor based on more and better forest growth that can be obtained are desperately needed, private forest lands under good management represent only a small proportion of all the commercially valuable forest lands. Some 72 million acres, or 62 percent of all privately owned forest lands, still lack adequate protection from fire. There is real progress, but it is largely confined to a minority of the owners of commercial forest lands.

Forest research, another major activity of the Forest Service, includes determination of sound technical and economic bases to guide policies and action programs applicable to forest and range lands. Research is directed through 12 forest experiment stations and the Forest Products Laboratory; it extends to 93 experimental forests and ranges that serve as outdoor laboratories, and to 33 natural areas that typify virgin conditions in the various forest and range regions.

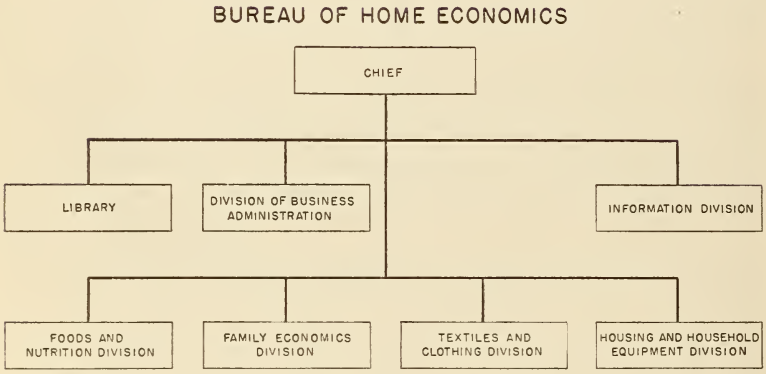
Research in forest management seeks how best to protect forests from fire, insects, and diseases and lays foundations for new and improved methods for tending forests, and for regenerating them naturally and artificially. It includes studies and experiments of improved methods of fire detection and control, and of methods and means for harvesting the forest crop, including farm wood lots, pulpwood, and naval stores.

Forest products research, conducted at the Forest Products Laboratory, is concerned chiefly with: (1) Reducing waste and lowering costs of harvesting, converting, and utilizing forest crops; (2) insuring better service from wood in natural and converted forms; (3) developing new uses for wood. All this is of direct value to producer, processor, and consumer. Current research includes the utilization of otherwise waste woods for pulp and paper; the chemical conversion of low-grade trees and logging and milling wastes into useful products; the control of moisture in lumber, the preservation of timbers, fence posts, etc.; and low-cost construction of homes, including prefabricating, insulating, fireproofing, and painting.

Forest resources play an essential part in rural as well as industrial economy. Economic conditions largely determine the extent to which good forest practices can be applied. A basic project in forest economics research is the Nation-wide forest survey. When completed, it will have appraised the forest resources, the present and potential growth, and the drain, on some 600,000,000 acres of forest land. Other economic investigations in forest economics have to do with: (1) Sound principles of forest taxation; (2) tax delinquency as it relates to forest lands; (3) forest fire insurance as a feasible commercial undertaking; (4) land and resource utilization to help stabilize tributary industries and communities on the basis of permanent land-and-resource management; (5) an analysis of the economic

aspects of timber growing and harvesting; and (6) methods for organizing and operating farm woodlands on a cooperative basis.

Research in forest and range influences is largely concerned with investigations of the role of plant cover on forest and range lands in relation to water flow and erosion. It includes intensive studies of the effects of cover on water; the absorptive capacity of forest soils; the effects of misuse of land on run-off; and of windbreaks on air movements, temperatures, soil moisture, and crops. It supplies information for the integrated program of flood control undertaken by the Department under the Omnibus Flood Control Act of June 22, 1936. Range research determines when and how much range lands can be grazed without injury to plant cover or soil. It helps determine forage values, grazing capacities, and range forage utilization standards, and aids in restoring and rebuilding depleted ranges and abandoned farm lands.


BUREAU OF HOME ECONOMICS
CHIEF
LIBRARY
DIVISION OF BUSINESS ADMINISTRATION
INFORMATION DIVISION
FOODS AND NUTRITION DIVISION
FAMILY ECONOMICS DIVISION
TEXTILES AND CLOTHING DIVISION
HOUSING AND HOUSEHOLD EQUIPMENT DIVISION

BUREAU OF HOME ECONOMICS

In a general policy of conservation and maximum development of the natural resources of the soil and the forests, an important phase is to determine how the resources, when converted into products for use, can best serve people and contribute to human welfare. That is an important function of the Bureau of Home Economics in relation to the whole broad program of the Department of Agriculture.

This Federal Bureau is a four-way laboratory. It serves the 30,000,000 homes by helping them to solve the broad economic problems of family living and the more specific questions involved in the purchase and use of food, clothing, equipment, and other goods and services. It serves the producers both of the raw materials and of the finished products used in the home plant, that is, farmers and manufacturers, and also the merchants who sell the products. It serves agriculture. Through its studies and its contacts with a wide public, it helps to find new and expanding uses for the products of the farm and to measure the results of the agricultural program in terms of how farm families live. Through research on income and the ways of spending of families in cities and villages as well as on farms, the Bureau provides information basic for formulation of a wide range of public policies, such as those relating to taxation, public roads, education, old age security, and housing.

In the laboratories of the Bureau is carried on continuous research in economic problems of families, foods and nutrition, textiles and clothing, and housing and household equipment.

Starting with the study of human nutrition, the Bureau's work has gradually widened in scope to include clothing, housing, equipment, and many other goods and services, and the use of agricultural and other resources in meeting these needs. Study of the economic problems of the Nation's families—the way their incomes are made, how they are spent, and an evaluation of the quality of living obtained—provides a background for interpreting the significance of other research in terms of levels of living.

Information on the nutrition needs of human beings and the adequacy of the diets families achieve in relation to their income is made available to individual homemakers and to many agencies that help to guide food habits. It forms part of the basis for standards used by public agencies in providing relief, in developing educational programs, and in aiding rural rehabilitation.

FAMILY ECONOMICS

How American families live, their incomes, what they spend and save, and whether their actual levels of living are in accord with our American standards are the fundamental problems of research in family economics. Such information is basic in determining our national requirements for production by agriculture and industry,

and the ways in which productive resources can be used to yield maximum human satisfactions.

Studies of family living are based upon information obtained from families concerning the amount of their income, how much is earned and by whom, how much comes from investments, pensions, and the like; how much they spend for food, clothing, housing, automobiles, fuel, and light, and the many other goods and services that modern technology makes available; how much families, especially those on farms, produce for home use, to supplement their money purchases; how much is saved for building up the family business, buying homes, or providing for future needs.

These facts are then evaluated in the light of our knowledge of human needs. For example, dietary studies indicate that less than a quarter of the families of nonrelief city wage earners have diets that can be rated as good, according to international standards. Although some of the poorly fed families could not afford to buy the food they need, well over half could have bought low-cost adequate diets had they known how. Also, if all the Nation's self-supporting families had diets classed as good, agriculture would have to produce at least 50 percent more milk, 50 percent more vegetables and fruits, and more eggs than are now consumed. Such information indicates the stake of both agriculture and industry in better incomes for the Nation's families and the importance of planning the farm production and the manufacture and distribution of food products so that the most vital nutritional needs of families are met.

Purchases of clothing, housing, and other goods and services are analyzed in a similar way. Science has not furnished as accurate yardsticks for appraising these items of family living as for food. Yet, facts as to the amounts spent by families in different localities at different income levels give some indication as to where there is underconsumption and where the national output of farms and factories goes. They thus serve as guides to producers studying actual and potential markets; and they also serve in developing public policies, since they tell the actual situations faced by families, such as the situation in regard to housing, use of services of doctors, and payments of sales' taxes on certain goods.

Ways of living change as new goods and services become available. The automobile, the radio, and rayon garments are now well entrenched in the family budget, where they were scarcely known a few decades ago. Studies of family consumption made periodically indicate trends such as these, that producers may well note. They, also, are essential for the Department's periodic revisions of the index of prices paid by farm families for goods bought for family maintenance.

Such facts help individual families in financial planning. The average expenditures of a group of families do not provide a budget or spending plan that will fit a specific family situation; but they do tell what others are doing and thus furnish a general pattern to be adapted to the needs and desires of a family trying to use its resources wisely. Food budgets planned to meet nutritional needs at low, moderate, or more generous cost levels are of especial value to the family striving to make ends meet and to plan a diet that will help to safeguard health. Such budgets are available as an

outgrowth of the studies of the kinds and quantities of different foods used by families at various income levels, and the appraisals of the quality of diets provided by these choices.

Educators, especially those in the Extension Service, are making increasing use of findings from family-living studies in their teaching. Such findings make education more vital since they indicate where wiser choices will improve living levels, what families can afford, and what items of family living rank high in their scale of preferences.

One of the major recent pieces of research has been the consumer purchases study made in cooperation with the Bureau of Labor Statistics of the United States Department of Labor, the National Resources Committee, and the Central Statistical Board and financed and aided by the Works Progress Administration. In this large-scale investigation of family living, the Bureau of Home Economics studied families in 19 small cities, 140 villages, and 66 agricultural counties. The results of this study will permit producers, governmental agencies of many sorts, teachers, social workers, and families themselves to focus attention on actualities—the needs of families and how they can best be met by individual effort and by broadly conceived social action.

FOODS AND NUTRITION

The nutrition laboratories of the Bureau conduct research studies on the nutritive requirements of man, on factors that influence the utilization of essential nutrients, on the quantitative occurrence and nutritional significance of trace elements in natural foods, and on the vitamin content of food materials.

The first Government program for nutrition research was undertaken 44 years ago to investigate the "cost, composition, and nutritive value of food materials" and to study "the laws of nutrition of humans." Many of the early studies of human requirements for food energy, protein, and the more important essential minerals still serve as authoritative sources of information. In more recent years, scientific interest has been centered on the vitamin content of foods, the relation of the different vitamins to human well-being, and the requirement of man for each of the vitamins.

An experimental method for determining the vitamin A requirements of adults has recently been developed in the nutrition laboratories. These determinations, expressed in terms of international units, are based on the minimum intakes of vitamin A which will prevent signs of subnormal dark adaptation, or night blindness, when all other essential nutrients are supplied in adequate quantities. Mild degrees of night blindness were found to be an earlier sign of an inadequate supply of vitamin A in the diet than any other of the recognizable signs of vitamin A deficiency. Two sources of vitamin A in the experimental diet were studied: Fish-liver oil, and carotene, a yellow pigment found abundantly in leafy, green, and yellow vegetables and capable of being transformed into vitamin A in the body. Studies on vitamin requirements of man are being coordinated with the dietary survey studies in order to evaluate the nutritional status of different population groups in this country.

Other current vitamin research includes both chemical studies and biological assays using experimental animals. Though notable strides have been made in recent years in singling out and chemically identifying the different vitamins, some of the factors of the vitamin B complex are still not clearly defined. Results of experimental work in this Bureau on separating out the unidentified factors of the vitamin B complex in rice polishings have established the means of preparing very potent concentrates of these factors, effective in promoting growth and well-being.

Intensive studies of the vitamin content of foods, and the effects of different methods of food preparation, processing, and preservation on the vitamin values are also being made in the nutrition laboratories. Tables summarizing these data, together with data on the vitamin content of foods supplied by scientific reports from other laboratories in this and other countries, have been published. As new data are accumulated, these tables are revised and supplemented.

Food sources of many of the mineral and other inorganic elements known to be needed by the human body either in measurable or in minute quantities have been determined through the years by quantitative chemical analysis. But some elements occur in natural foods in such minute traces that they can be studied only by spectrographic analysis. A spectrograph has been added to Bureau equipment to determine the presence of trace elements in foods. The significance of these trace elements in nutrition is also studied.

An early study of the composition of American food materials is still a standard reference on the subject of proximate composition and caloric values of various foods. From time to time, as more analyses of foods are published and new foods come onto the market, the Bureau supplements these food-composition tables and makes reliable data available for the use of dietitians, physicians, and others who are concerned with detailed figures on food values.

Important as studies of food values are in providing the basis for selecting an adequate diet for the family, investigations of food quality and of the principles and methods of food preparation and preservation must parallel them if the full answer is to be obtained. The table quality and nutritive value of food are affected by conditions of production and by handling and processing that occur between the source of production and the home. Methods of preparation and processing applied in the home also have their influence on the quality of the final product. In the food-utilization laboratories many of these factors that affect table quality, palatability, and food value are being studied, in some cases through the cooperation of other bureaus in the Department.

One of these investigations is an extensive study of factors that affect the palatability of meat, carried on in cooperation with the Bureaus of Animal Industry and Agricultural Economics, and State agricultural experiment stations. Cuts from a large number of experimental animals of known history have been cooked by standard methods to determine how the palatability of meat is affected by feed, breed, sex, and age of the animal, and by the different methods of curing and storing the meat. Studies of the effect of diet and of processing on the palatability of poultry flesh are also under way.

Similar studies in cooperation with the Bureau of Plant Industry include the effect of environment, soil, method of planting, variety, and storage on the cooking quality of potatoes. The effect of such factors as environment and diet, season of the year, and the laying cycle of the hen on the lifting power of egg whites have been determined in the making of sponge cakes. Fats have several functions in food preparation, but some fats are more valuable for one use than another. Comparative tests are made of different types of fats in deep-fat frying and as shortening.

Scientific studies of all processes of home preservation—canning, pickling, jelly making, and preserving—are made, and the results are interpreted in the form of recommended methods for the homemaker. Since the home canning of meat presents a special problem, current research includes a detailed study of processing meat in the home to attain a safe and palatable product. To test the desirability of different processes, the jars of meat are inoculated with bacteria of known heat resistance. After processing, the sealed jars are incubated at temperatures favorable to the growth of the organism to indicate if spoilage occurs under any of the processing conditions.

Other studies in food utilization are designed to show the best ways of using new foods and new ways of using familiar foods. Reliable recipes suitable for diets at different cost levels are constantly being developed.

TEXTILES AND CLOTHING

Next to food, cotton and wool are the two most important agricultural products used by the consumer. Choosing the right fibers and fabrics for clothing and household use is not so simple as it used to be. Silks, synthetics, and especially treated textiles of constantly changing name and variety are competing with the staple woolen and cotton materials for consumer preference. As a result, both distributors and consumers are demanding unbiased facts on wear, shrinkage, warmth, and other service qualities of all types of fabrics.

The tests which the Bureau of Home Economics is making of the wearing qualities of different kinds and grades of wool and cotton, begin with the cotton in the field and the wool on the back of the sheep, products of known history secured through the cooperation of other bureaus of the Department, and State agencies. These products are woven into woolen blankets, cotton sheets, and various garment fabrics under supervision and put into actual use. Records are kept and the rate and type of deterioration studied until the articles are worn out.

The value of these and similar tests is threefold. They aid the consumer in her purchases, guide the producer in his choice of cotton varieties and sheep breeds, and help supply information needed for effective labeling of goods.

Such information also forms the basis for practical buying guides for the homemaker. These guides give simple, concise rules for judging such questions as whether a coat will be warm and hold its style and shape, and how much wear can be expected from towels of a certain weave and weight. On the theory that "one seeing is worth a hundred tellings," this information is presented in illustrated bulletins, picture series, charts, and exhibits.

To help secure more satisfactory measurements for children's ready-to-wear clothing and patterns, so that mothers can obtain better fitting garments for their children, the Bureau is leading a Nation-wide cooperative child-measuring project. New size recommendations will be based on this study of body measurements of 100,000 children of both sexes and all ages from 4 to 14 years, representing many geographic areas and two economic levels. This study was made possible by funds supplied by the Works Progress Administration. The National Youth Administration and 19 colleges, universities, and other agencies are cooperating.

HOUSING AND HOUSEHOLD EQUIPMENT

The steadily growing interest in all types of problems related to housing within the past few years has created a demand for factual information that can be used in planning houses and household equipment to meet the diverse needs of families, both urban and rural.

Surveys of housing needs under different climatic conditions for families of varying social and economic status have been made and are being checked by laboratory studies, as well as detailed studies in houses planned to meet special needs. These studies include consideration of the allocation of space for the activities pertaining to family life and the work of the household, provisions for children of different ages, the size and arrangement of work areas, as kitchens, laundry and special workrooms, and the heights of working surfaces, materials and finishes for interior surfaces, and studies of storage areas for both rural and urban homes.

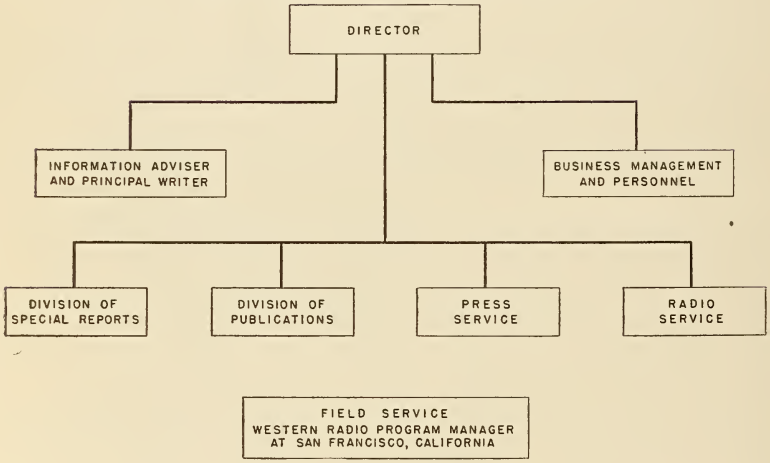
Mechanical and electrical equipment for the home has developed so rapidly that the selection, operation, and care of household appliances has become a major problem of the consumer. With the rapid growth of the rural-electrification program there has come an urgent demand for information regarding the selection of equipment which will result in effective and profitable use of electricity in the farm home, as well as by urban families. Research on mechanical and electrical equipment includes (1) the study of the use and efficiency of equipment on the market, (2) the setting up of performance specifications to guide the manufacturer, and (3) the determination of the most effective and economical use and care of equipment.

HOW THE INFORMATION IS SPREAD

By printed word, spoken word, picture, and exhibit, the results of the Bureau's work are made known to the public as soon as a project reaches completion. Printed materials include bulletins for the homemaker, giving practical suggestions for buying household articles, and feeding and clothing the family, in line with the latest scientific findings. Technical bulletins and articles give the latest word in all lines of home economics research for the student, extension worker, teacher, and research worker. Newspaper releases and radio talks report new developments in foods, nutrition, textiles, and household equipment.

Because of the high educative value of pictures, more attention is being given to the use of photographs and pictorial charts in reporting scientific studies. Series of wall charts are being developed on the various phases of the Bureau's work for demonstration and classroom use. Among those completed are series on such subjects as selecting women's and children's garments, on modern scientific methods of cooking meat, and on the effect of diet and different food elements on body growth and health.

OFFICE OF INFORMATION



OFFICE OF INFORMATION

The Department of Agriculture was directed in the organic act of 1862 to "acquire and diffuse" information pertaining to agriculture. One fundamental purpose of the Office of Information is to aid in carrying out the task of diffusing information acquired by research or essential to the functioning of the service and regulatory work done by Department agencies.

In recent years the Congress has passed a score of laws providing governmental aids to help farm people solve the problems raised by new relations of agriculture to the affairs of other groups in this Nation and new relations of this Nation with other nations. In the farm legislation of the 1930's, enacted in response to the needs of agriculture, Congress has set up broad objectives. Among them are: (1) Stability of farm prices, farm income, and rural-urban relationships; (2) the conservation of soil, water, forests, and grass; (3) security of tenure for farmers, with an increase in the number and proportion of owner-farmers and better conditions for tenants; (4) efficient production and distribution, and consumption of farm products in the amount necessary to assure national health; and (5) higher standards of rural living and stability of rural communities through integrated crop adjustment and better land use.

To reach such goals individual farmers accept and apply Government aids; groups of farmers work together in a variety of cooperative actions for which Federal assistance is granted. In order to act individually and in cooperative groups, farmers must have pertinent facts about the problems they are trying to solve, about the types of Federal assistance they can get to help in solving the problems, and about the actions that groups and individuals must take in order to become eligible for assistance. A second fundamental purpose of the Office of Information, then, is to facilitate the issuance to farmers by publications, press, and radio of information necessary to enable them to participate in the action programs of the Department. A third fundamental purpose is to issue through these channels information that will make clear to all citizens the broad purposes of the total program of work being carried on by the Department.

The Office of Information is in nowise a publicity agency in the usual sense of that term. Its purpose is not to acquire prestige for itself, for the Department, or for any of its constituent agencies, but to provide citizens with the information they need in order to avail themselves of the public services operated by the Department.

This Office handles all major questions affecting the informational work of the Department, including editorial matters, the printing, illustrating, and distributing of published material. It supervises and coordinates publication activities, and issuance to the press and by radio of information from all the bureaus and offices of the Department, most of which maintain editorial offices to originate

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publications, press matter, and radio program suggestions dealing with the work of their own agencies. It originates publications, press matter, and radio programs dealing with the work of two or more agencies, or of the Department as a whole. The 48 agricultural colleges and 53 experiment stations in the States and the Department's Extension Service cooperate with the Office of Information in coordinating regional and national information. The Office also cooperates with the Congressional Joint Committee on Printing, the Public Printer, and the Interdepartmental Committee on Printing and Processing in developing effective and economical publishing methods. It has 4 main sections—Division of Publications, Division of Special Reports, Press Service, and Radio Service.

DIVISION OF PUBLICATIONS

The Department's publication program is an outgrowth of 75 years' experience and is adapted as closely as possible to the needs of rural residents, research workers and institutions, agricultural business interests, extension groups, and the general public. The service agency for this program is the Division of Publications. It editorially reviews, illustrates, and indexes the material prepared by the bureaus and offices for printing, supervises its flow through the Government Printing Office, prepares lists of the printed publications, and distributes both lists and publications on request from the public and Members of Congress.

Because of the diversified work of the Department in response to demand and Congressional authorization, the publications issued are of widely varying nature as regards content, size, and the reader groups for whom intended. Besides the periodicals and miscellaneous material issued by the bureaus, the following series are published: Farmers' Bulletins, Leaflets, Circulars, Miscellaneous Publications, Statistical Bulletins, Technical Bulletins, Soil Surveys, reports on erosion and related land use conditions, annual reports, the Yearbook, Journal of Agricultural Research, and unnumbered publications. Of these, the Yearbook is printed in the largest edition, nearly 250,000 copies being issued. The bulk of the supply is subject to Congressional orders; the Department distributes only 15,000 copies. The subject matter of this volume is different each year, but it is always important and interesting and covers a vast amount of useful information which becomes a storehouse of facts for the farmer and the general public.

Under the law, four-fifths of the total number of copies of Farmers' Bulletins printed are subject to distribution by Members of Congress, and their orders are sent through the Division of Publications, where the quota records are kept. The total distribution of all Department publications each year amounts to about 25,000,000 copies, of which nearly half are Farmers' Bulletins and Leaflets distributed by Members of Congress and the Department. In addition the Superintendent of Documents sells about 600,000 copies of Department publications each year.

As the Department is the source of so much information useful to the citizens of the United States and of other countries as well, it is natural that there should be a large volume of requests for information, and particularly for that in published form. The Di-

vision of Publications accordingly receives almost 1,000,000 individual requests a year for either publications or information.

To meet the demand of the public and the Department bureaus for the expeditious issuance of material of ephemeral nature more than 100,000,000 pages of mimeographed, multigraphed, or multilithed material are issued each year by the Division.

DIVISION OF SPECIAL REPORTS

The Division of Special Reports is concerned chiefly with the preparation of informative material dealing with the total program of work of the Department of Agriculture and with activities with which many agencies of the Department are concerned.

This material is made available in the form of publications, special articles, and reports, which are prepared for distribution to farmers and to the public generally. They are prepared in response to a growing demand and a growing need for information dealing with the purposes of the total program of the Department.

Authorizations by Congress in recent years, together with earlier legislation, have provided broad programs of assisting farmers in dealing with the needs of agriculture locally, nationally, and internationally. The work of this Division is concerned with the information phase of integrating and coordinating these programs.

Working in cooperation with all bureaus and agencies of the Department, the Division prepares material presenting facts about the problems that farmers are trying to solve, the types of assistance the Department can give farmers in dealing with these problems, and the actions that groups of farmers can take to make most effective use of the assistance available.

PRESS SERVICE

The Press Service provides to daily and weekly newspapers, farm journals, trade journals, and general magazines information from the Department of interest and value to their readers.

Many announcements from the Department are of great importance to readers, and they are handled in newspapers as spot news. The announcement of national acreage allotments for wheat or cotton is an example. The daily press usually gives the bare facts. The weekly or monthly press follows with interpretative articles and discussion. The farm journals, in particular, are likely to relate this information to other farm programs and to the individual farming plans of families in their territories.

In much the same way the stories of research in the Department get to the reading public. News of an important discovery is flashed across the country by the press associations, and is carried immediately by daily newspapers. Scientific journals present precise accounts of the experiment, for the use of scientists outside the Department. Weekly newspapers and farm papers point out the application of the new knowledge in everyday farming operations.

The Press Service plays an important part in getting these stories to the press of the Nation. Its first function is to serve as a central information agency for the convenience of writers and editors, particularly the members of the Washington press corps, who number

more than 300. Experience has proved that it is more satisfactory, both for the press and for the Department, to issue all Washington releases for the press through the Press Service.

Another important function of the Press Service is the coordination of information sent to the press by the Department. It is not unusual for three or more agencies of the Department to be carrying on programs in the same locality. Under the present arrangement each of the agencies gives out information on its own program, but the public and the press often want stories on the objectives and progress of all programs operating in a locality or a region. It is the job of the Press Service to anticipate these demands and to prepare such stories or to assist writers and editors in preparing them.

The Press Service distributes informational news releases (1) directly to Washington correspondents and writers serving press associations and individual publications, (2) by mail to publications classified according to their special interests, and (3) to extension editors at the land-grant colleges, who are responsible for adapting the material locally and timing it to reach the public when it is seasonal.

Another source of much press material is through interviews. The Chief of the Press Service is available at all times for telephone or personal interviews by reporters and special feature writers. If a press representative wishes to talk to administrative officials or research men for additional information, he is encouraged to do so.

The Press Service provides centralized service to the Department and to the press on photographs as well as on news material. No prints are sent out except upon specific request, and none are sent to individuals or groups other than the press.

Mailing lists of the Press Service are based entirely on requests for this service, and are revised annually to guarantee that only those who are making use of releases receive them. Press mailing lists are classified according to subject matter and type of publication. As an additional safeguard the more important lists are broken down by States, making it possible to regionalize distribution.

RADIO SERVICE

The Department of Agriculture established a Radio Service in 1926. Previously the Department had used the radio only to send weather reports and market news to the public. The Radio Service undertook to supply cooperating stations throughout the country with informational and educational programs reporting results of the Department's work. Today more than half of the 747 radio stations in the United States cooperate daily with the Department.

Market news is broadcast by about 350 stations, and weather forecasts and reports by approximately 400.

The Department issues two types of informational and educational programs. One type is the network broadcast simultaneously transmitted by several stations; the other is the broadcasts transmitted by individual stations.

Programs have been issued for transmission by individual stations since 1926. They are prepared in manuscript form and are of two types: Farm Flashes and Homemaker's Chats. The Farm Flashes carry agricultural information and are sent to States in which the

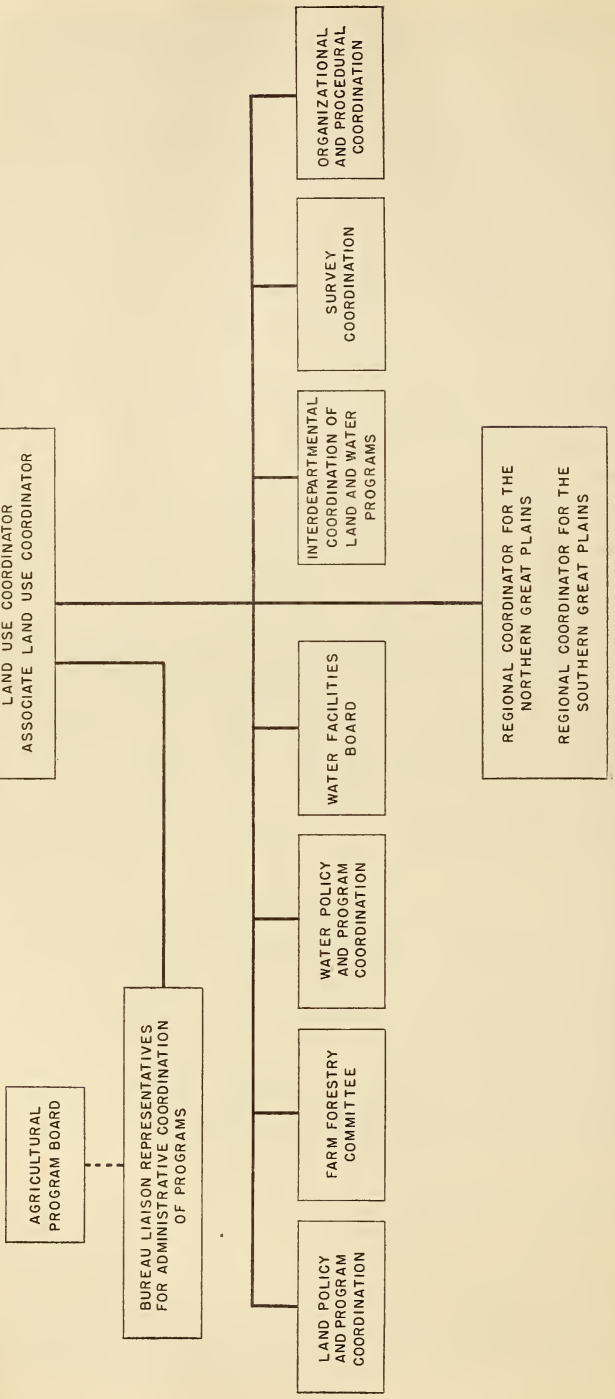
information is applicable. The Homemakers' Chats are issued daily except Sunday and carry information for urban and rural women. The Farm Flashes are supplied to 439 stations, the Homemakers' Chats to 249.

At first the manuscript programs for individual stations were sent direct to the stations. For the past 8 years, however, a system has been gradually organized whereby the Department's manuscript programs go to the stations State by State through the office of the State agricultural extension editor. For the Farm Flashes this system is now in effect in 43 States. The extension editor revises and adapts the Flashes, and complements them with information coming from research and service work of the State agricultural research and extension agencies. The Homemakers' Chats contain information that has Nation-wide application, thereby making local adaptation unnecessary. This accounts for the fact that the Homemakers' Chats go to stations through the extension editors in only 11 States.

The network companies have made available to the Department much broadcasting time for taking information to farmers and homemakers. The National Broadcasting Co. has put at the Department's disposal a period in the National Farm and Home Hour. The Department broadcasts in this program from Monday to Friday, inclusive. In addition, the entire hour on the first Saturday in each month is given over to a National 4–H Club program conducted in cooperation with the State extension services. The National Farm and Home Hour is transmitted by 104 stations coast-to-coast. The National Broadcasting Co. also has made available to the Department a 15-minute period Monday through Friday on its Pacific coast blue network. Six stations on that network broadcast western regional Department programs. Through these daily broadcasts over the networks the Department keeps the radio audience in close touch with new developments of the program of agricultural adjustment and new findings of the scientists and economists. Besides this daily service over the NBC networks, this company and the Columbia Broadcasting System from time to time make available to the Department and cooperating agencies networks for special single programs, or for short series. A weekly afternoon broadcast has been arranged over NBC in collaboration with the General Federation of Women's Clubs. The aim of this series is to keep consumers informed concerning the relation of the agricultural programs to them.

Since July 27, 1937, the Department has furnished the United Press Radio News Service with spot news, daily except Sunday. This information goes to some 200 subscribers to United Press Radio News Service, in a "column" called On the Farm Front.

All radio facilities are furnished to the Department without charge by the broadcasting stations and networks.


OFFICE OF LAND USE COORDINATION
LAND USE COORDINATOR
ASSOCIATE LAND USE COORDINATOR
AGRICULTURAL PROGRAM BOARD
BUREAU LIAISON REPRESENTATIVES FOR ADMINISTRATIVE COORDINATION OF PROGRAMS
LAND POLICY AND PROGRAM COORDINATION
FARM FORESTRY COMMITTEE
WATER POLICY AND PROGRAM COORDINATION
WATER FACILITIES BOARD
INTERDEPARTMENTAL COORDINATION OF LAND AND WATER PROGRAMS
SURVEY COORDINATION
ORGANIZATIONAL AND PROCEDURAL COORDINATION
REGIONAL COORDINATOR FOR THE NORTHERN GREAT PLAINS
REGIONAL COORDINATOR FOR THE SOUTHERN GREAT PLAINS

OFFICE OF LAND USE COORDINATION

The Office of Land Use Coordination is composed of a small staff which serves the Secretary, the Agricultural Program Board, and the Secretary's Coordinating Committee in an executive capacity. It is the particular task of the Office to promote coordination among bureaus in the administration of Department's land- and water-use programs, between the Department and other agencies of the Federal Government, and between the Department and the States. By promoting cooperative and collaborative procedures, it helps all agencies to work harmoniously toward common objectives. Within the Department, contact with the bureaus is maintained through a liaison board composed of a representative from each of the agencies of the Department that take part in land use research, planning, and operations. Each representative is responsible for effectuating within his agency the decisions of the board.

The principal personnel of the Office consists of the Land Use Coordinator, who also is a member of the Secretary's Coordinating Committee and chairman of the Agricultural Program Board; the Associate Coordinator; and officers in charge of land-policy coordination, water-policy coordination, survey coordination, interdepartmental coordination, and organization and administrative coordination. In handling the legal, legislative, and policy phases of land and water-use coordination, the Office cooperates with the Solicitor's Office.

The Office cooperates with the heads of all Department operating agencies in bringing land use operations in harmony with the general land and water-use plans which the Bureau of Agricultural Economics develops with the operating bureaus. In the same way, the Office cooperates with the Director of Research and the Director of Extension Work in helping to harmonize the research and educational phases of the Department's land and water-use programs with the operational phases thereof.

In instances where a single program of action needs to be administered by more than one agency within the Department, the Office coordinates the efforts of each toward a unified policy and approach. Examples of programs requiring this type of coordination are farm forestry under the Norris-Doxey Act, water-facilities development under the Pope-Jones Water Facilities Act, and land treatment for flood control under authority of the Omnibus Flood Control Act of 1936.

SURVEY COORDINATION

The planning for, and administration of, land-use and water-utilization programs cannot properly go forward without full knowledge of basic facts. Many of these facts must be gathered through surveys, and the various branches of the Department undertake many kinds of them—soil surveys, aerial surveys, flood-control surveys, conservation

surveys, forest surveys, economic surveys—all of which are necessary to the conduct of the land use programs. The Office of Land Use Coordination aids in scheduling surveys in order to prevent duplication of effort, to have surveys completed in the places and at the times necessary to serve the action programs, and to assure that each survey, no matter which agency within the Department undertakes it, will, so far as possible, meet the needs of the entire Department. The Office helps the bureaus to formulate, establish, and maintain technical and administrative standards for surveys that are acceptable to all. It works with agencies outside the Department, both State and Federal, in helping to plan for surveys that will meet the needs of the programs of both the Department and cooperating agencies.

LAND-POLICY COORDINATION

The Office of Land Use Coordination acts in an advisory capacity to the Secretary and represents him in the whole field of formulation, execution, and coordination of land policy. It maintains a continuing contact in a liaison capacity with the several land-administering agencies in the Department and with those in other Departments, and assists in working out solutions to problems of land use and administration of mutual interest. It studies both the impact of various programs upon those who use land, and also the relation between the administration of public land and the use of private land. Its functions include an examination into the purposes of various land use measures, including acquisition, and the problems of land use and management as they affect State and local governments. The Office serves as a Washington liaison for the interdepartmental Rio Grande board, and through the regional coordinators it functions in the field to secure unity of objectives and correlation of action influencing land use.

In addition to its advisory and representative functions in the land-policy field, the Office performs many day-to-day tasks. In its liaison capacity with the bureaus, it clears and coordinates all proposed land-purchase projects, soil conservation districts, demonstration areas, and nursery sites, and all reports on bills affecting land use to insure that they shall accurately represent the Department's position. It also serves as a medium for resolving such differences as may arise, both within the Department and interdepartmentally.

WATER-POLICY COORDINATION

The responsibility for water-policy coordination is the same as in the field of land-policy coordination. Land utilization and water utilization in agriculture are closely interrelated. This relationship is especially apparent in the Western States, where the use of land is determined and limited by water supplies and water-development policies.

A number of agencies within the Department deal with various aspects of water utilization, and it is necessary to coordinate these activities, particularly as to policy from the viewpoint of the Department as a whole. All action then must be made to coincide with the general over-all program. As in the land use field, the Office of Land Use Coordination helps in the water-use field to bring the

policies and operations of the Department into harmony. To indicate the scope and complexities of the task: One branch of the Department assists drainage projects, to make land suitable for agriculture; another administers lands—the national forests—which are a source of water supply for agriculture; two bureaus carry on jointly a water-facilities-development program in the Western States; another administers a program of soil and water conservation which influences the work of all the others.

INTERDEPARTMENTAL COORDINATION

Just as the programs of each bureau of the Department must be coordinated with those of the others, so the total land and water-use program of the Department must be fitted into the larger scope of Government effort. Interdepartmental land use coordination provides the machinery for meshing the Department's land use policies and programs with those of other departments and for cooperating in evolving national land use policies and programs mutually beneficial to agriculture and the Nation as a whole.

Since some of the land use, water-utilization, and flood-control programs are administered by Departments other than Agriculture, continuous contact with the other Departments is essential, for some of the basic Government land use policies are determined interdepartmentally. The Office of Land Use Coordination performs this function for the Secretary. The Office also maintains continuous liaison relations with the National Resources Committee, whose work in a broader field of formulating land use and water-utilization policy is intimately related to the activities of the Department.

One example of two Departments working on a single program is the flood control work under the Omnibus Flood Control Act of 1936, as amended. The Corps of Engineers of the War Department is responsible for the downstream part of the program—planning for and constructing the levees, dams, floodways, and other essential engineering works. The land-treatment phase—reforestation, water-conserving cropping practices, soil engineering—is under the direction of the Department of Agriculture.

Another example of the need for coordination of policies is the grazing lands in the West. Basic policies for grazing on national forests (the Department of Agriculture), public domain and Taylor grazing districts (the Department of the Interior), and privately owned lands (the Department of Agriculture) must supplement each other, if the grazing and related resources are to be properly used, and agriculture in the West properly served.

The Department of Agriculture and other Departments and agencies cooperate by making technical services available to each other. The Soil Conservation Service of the Department of Agriculture works closely with the Indian Service, the Division of Grazing, and other branches of the Department of the Interior, for example, in carrying on soil conservation operations on Indian lands, in grazing districts, and in Territories and island possessions; with the Bureau of Reclamation in making snow surveys to determine the supply of available water for reservoirs to serve as a guide to planting operations on irrigated lands, and with other bureaus in many ways.

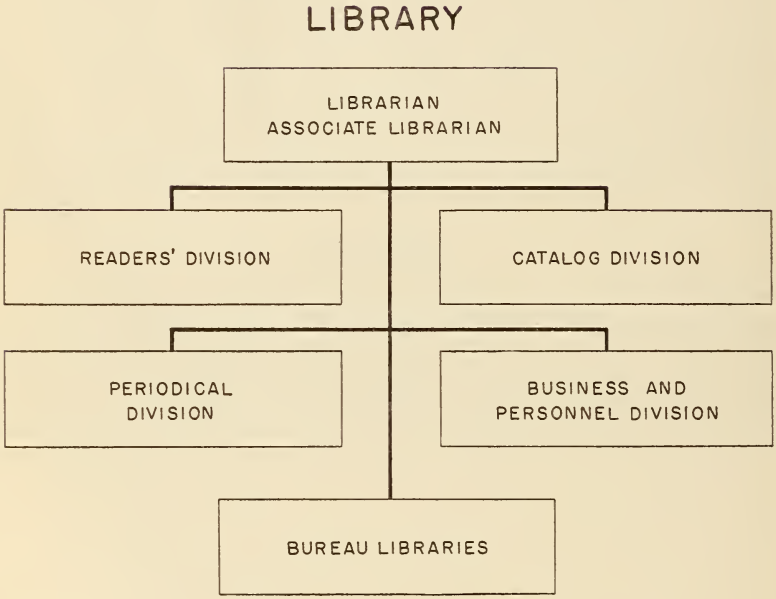
ADMINISTRATIVE COORDINATION

As conditions change and programs are adjusted to new circumstances, administrative alignments and procedures outlive their usefulness, and adjustments must be made. In this transitional period in agriculture changes come with particular rapidity in the land use and water-utilization programs. Governmental response to change cannot afford to lag in administrative organization. The Office of Land Use Coordination strives to keep abreast of administrative needs, studies problems of organization and administration and makes recommendations to the Secretary for improvements that will promote coordination and the attainment of the Department's objectives efficiently and economically, and with the fullest possible convenience to the farm public which it serves.

The Secretary's Coordinating Committee, which the Office of Land Use Coordination serves in an executive capacity, considers many questions having to do with the day-to-day operations of the Department in a field even wider than land use. The committee considers departmental organization and reorganization when necessary, the relations of the Department with other agencies of Government, including State agencies such as the land-grant colleges, Presidential recommendations to Congress affecting the Department, and bills pending in Congress, and carries out special assignments for the Secretary.

FIELD STAFF

Two field offices are maintained by the Office of Land Use Coordination, one at Lincoln, Nebr., to serve the northern Great Plains, and the second at Amarillo, Tex., for the southern Great Plains. These field offices coordinate, with the advice and guidance of regional committees composed of representatives of public agencies, the agricultural programs of the Department with those of the State colleges, State conservation boards, and other agencies working in the Plains region.


LIBRARY
LIBRARIAN
ASSOCIATE LIBRARIAN
READERS' DIVISION
CATALOG DIVISION
PERIODICAL
DIVISION
BUSINESS AND
PERSONNEL DIVISION
BUREAU LIBRARIES

LIBRARY

The library of the Department is scientific, technical, economic, and statistical in character. It furnishes the books, periodicals, newspapers, and other publications needed for consultation in carrying on the work of the Department. It also furnishes the service needed in the use of these publications in all the activities of the Department—in the research, extension, and regulatory work, and in the work connected more definitely with administration. The total collections of the library, exclusive of those of the Weather Bureau, now number approximately 300,000 volumes. The periodicals received currently number approximately 5,000, and an even greater number of serials such as annual reports, proceedings, and transactions are currently received. The day's mail brings books, periodicals, and exchanges from every civilized country and in every language in which scientific data are recorded.

HISTORY

The library may be said to have been established in 1862 when the Department was established, but its foundations were laid earlier, in the Agricultural Division of the Patent Office. While the need of a library to facilitate its work was thus recognized by the Department from its very beginning, the development of the library during the first 3 decades of its history was slow, its quarters were cramped, and its service was limited. On the completion, in 1868, of a new building for the Department, a special room was set aside for the library on the first floor at the west end. In a few years these quarters were outgrown, and the library was moved to the space on the second floor formerly occupied by the museum. The year 1893 marked a new era in its history. In that year a new librarian was appointed, the library was reorganized, modern library methods were introduced, and a more adequate bibliographical and reference service was started. When two new laboratory buildings for the Department were completed in 1908, the library, which had again outgrown its quarters, was moved to the basement of the east wing. It remained there till March 1915, when it was moved to larger quarters in a new office building erected for the use of the Department at 1358 B Street SW. In the summer of 1932, on the completion of the fourth and fifth wings of the South Building, the library was moved to its present central location on the first floor; but the air-conditioned stacks, especially designed for the library, were not completed till December 1934. Because of its increased space, central location, and easy accessibility to several of the bureaus which previously had been located at a distance from the library, it was possible at the time of the last move to bring about a greater centralization of the book collections. Nearly a third of the collections are, however, still filed in branch libraries and offices. The library now occupies 58,768 square feet of space, about two-thirds of which is stack space, and the remainder office, reference, and workrooms.

ORGANIZATION

The Library is not a single collection; it is a unified system comprising a main Library and branch libraries in the various bureaus and offices.

The work of the main Library is divided into four divisions: (1) the Readers' Division, which includes the reference and circulation work; (2) the Catalog Division, which classifies and catalogs the accessions to the Library; (3) the Periodical Division, which acquires and circulates the periodicals and other serials; and (4) the business office. The order work is divided between the Catalog Division and the Periodical Division, the chief of the Catalog Division having charge of the ordering of the books, and the chief of the Periodical Division having charge of the ordering of the periodicals. In the main Library are filed, with certain exceptions, the reference collections, the publications of more general interest to all the bureaus, and likewise the older and less-used material. The branch libraries are special working collections on the subjects with which the various bureaus and offices deal. All have librarians and assistants in charge who specialize in the reference and bibliographical work in the subjects of special interest to the bureaus and offices with which they are respectively connected.

The list of bureaus in which libraries are maintained is as follows: Agricultural Chemistry and Engineering, Agricultural Economics, Animal Industry, Commodity Exchange Administration, Dairy Industry, Entomology and Plant Quarantine, Office of Experiment Stations, Forest Service, Home Economics, Plant Industry, Soil Conservation Service, Solicitor's office, and the Weather Bureau. In addition to these 13 branch libraries there are 4 subbranches as follows: Division of Cotton Marketing (Agricultural Marketing Service), Fertilizer Investigations (Bureau of Agricultural Chemistry and Engineering), Bee Culture Investigations (Bureau of Entomology and Plant Quarantine), and the Beltsville branch of the Bureau of Animal Industry Library.

SCOPE

On the general subject of agriculture and all of its branches, the Library's collections include not only books, periodicals, and society publications but also what may be termed the official agricultural literature. No other collection in this country is so strong in local, State, and national official agricultural publications of the United States, especially the State experiment station and State extension publications.

Statistical publications relating to agriculture have been collected practically from the very beginning of the Library, but in the last 25 years the literature of the broader subject of agricultural economics and marketing has rapidly increased, and in this general subject the Library is now especially strong, the collections comprising approximately 80,000 volumes and pamphlets.

In the literature relating to animal diseases, animal husbandry, and dairying, needed by the Bureaus of Animal Industry and Dairy Industry, the Library's collections are extensive. The sets of zoological

and natural history journals and society publications are worthy of special mention.

The entomological collections cover all phases of entomology and allied subjects, for example, biological control of parasites, medical entomology, ecology, insecticides, spraying, fumigation, bee culture, stored products, insects, insect taxonomy, etc. In the economic phase of entomology it is probably not surpassed by any collection in the country. Its files of entomological periodicals are especially complete.

The chemistry collections contain the important up-to-date books in organic, inorganic, physiological, colloidal, analytical, and applied chemistry. Those on drugs, pharmacy, pharmacology, foods and nutrition, and dyes are also extensive, The greatest strength of the chemical collection lies, in the files of American and foreign chemical journals.

The forestry collections cover all phases of the subject of forestry, besides such related subjects as lumbering. As in the case of other collections, the greatest strength is in the files of periodical and other serial publications.

Since the establishment of the Bureau of Home Economics, the Library has been building up a collection of publications on the problems of the home, including foods, nutrition, textiles and clothing, and housing and equipment.

Although the Bureau of Plant Industry draws upon nearly every class of scientific literature, its interests are, broadly speaking, botanical, and in this field the Library collections include the essential working books of systematic botany, an extensive collection of publications relating to botany, and many important and rare old works, including valuable folios with beautiful plates. A somewhat unusual feature is a collection of more than 60,000 horticultural trade catalogs, the early ones dating back to the eighteenth century.

Other major collections relate to soils and agricultural engineering (including irrigation and drainage), farm buildings, farm equipment, and rural sanitation. There is a rapidly growing law collection.

The Weather Bureau library contains more than 60,000 volumes and is the largest single collection of meteorological literature in the world.

Utility mainly determines the choice of books. Books are not purchased because of their rarity or beauty unless they have also a scientific or historical value to the Department. Nevertheless, the Library contains many rare books and periodicals. Full advantage is taken of the resources of other Government libraries, particularly the Library of Congress and the Surgeon General's library. Books that are available in other libraries in Washington are not duplicated unless needed for frequent consultation.

REFERENCE ROOMS

Reading and reference rooms are maintained both for books and current periodicals. New books are displayed on the new book shelves in the Reference Room and new issues of current periodicals on display racks in the Periodical Reading Room, for a period of 1 week. Admittance to the stacks is by special permit.

CATALOGS, INDEXES, AND BIBLIOGRAPHIES

The dictionary card catalog of the Library, the greatest single source of information on the literature of agriculture and the related sciences, now contains approximately a million cards and is a record of the book resources of the whole Department with the exception of the collections of the Weather Bureau. This dictionary catalog also contains printed cards for books of interest to the Department that are available in the Library of Congress and other Government libraries. In the special subjects of prime concern to the various bureaus the general catalog of the Library is supplemented by more detailed special catalogs and indexes on various subjects prepared in large part by the bureau libraries.

Supplementing the general and special catalogs and the special indexes of the libraries are bibliographies and lists that have been prepared both by the main Library and the bureau libraries. Most of these are mimeographed. The series of Bibliographical Contributions issued by the Department Library numbers 34 to date. In a series of Agricultural Economics Bibliographies, issued by the Bureau of Agricultural Economics, 79 numbers have been issued. In addition to the bibliographies included in these series, there are separate bibliographies issued by the libraries of the various bureaus and offices. A list of the current periodicals received by the Library was issued in 1936 as Miscellaneous Publication No. 245.

Another type of bibliographical service furnished by the various libraries of the Department is the regular issuance of mimeographed lists of current literature. These are as follows: Agricultural library notes, containing principal accessions to the Department Library and various bibliographical lists and articles; agricultural economics literature (Bureau of Agricultural Economics); agricultural engineering current literature (Bureau of Agricultural Chemistry and Engineering); cotton literature (Division of Cotton Marketing, Agricultural Marketing Service); entomology current literature (Bureau of Entomology and Plant Quarantine); forestry current literature (Forest Service); plant science literature (Bureau of Plant Industry); and soil conservation literature (Soil Conservation Service). The Office of Experiment Stations library also compiles various lists of State experiment station and State extension literature. These various current lists aid the Department workers in keeping informed about new material on their various subjects and are being increasingly used by investigators outside the Department. The Experiment Station Record also serves as an index to the Department Library, since most of the books and periodicals abstracted in the record are contained in the Library.

USE

While the Library is first of all for the benefit of the Department, it is free for reference to any who wish to use it. Books needed in research work are lent to libraries and institutions in every State of the Union, particularly to the various State agricultural colleges and experiment stations. The Library also aims to serve as a center of bibliographical information relating to the literature of scientific agriculture.

In November 1934, the Library inaugurated a film-copying service called the Bibliofilm Service, the special purpose of which was (1) to decrease interlibrary loans of books by supplying directly to individuals film copies of scientific articles, particularly those contained in periodicals, and (2) to extend the use of the resources of the library to isolated scientific workers without library facilities. Since July 1937 the Bibliofilm Service has been carried on under a cooperative agreement with the American Documentation Institute (a nonprofit organization) which has taken over the business management, the photographic work, and the experimental work connected with the improvement of the technique and photographic equipment. The Library provides space for the Bibliofilm Service, supplies such publications from its collections as are requested, and does the bibliographical work connected with the requests for these publications.

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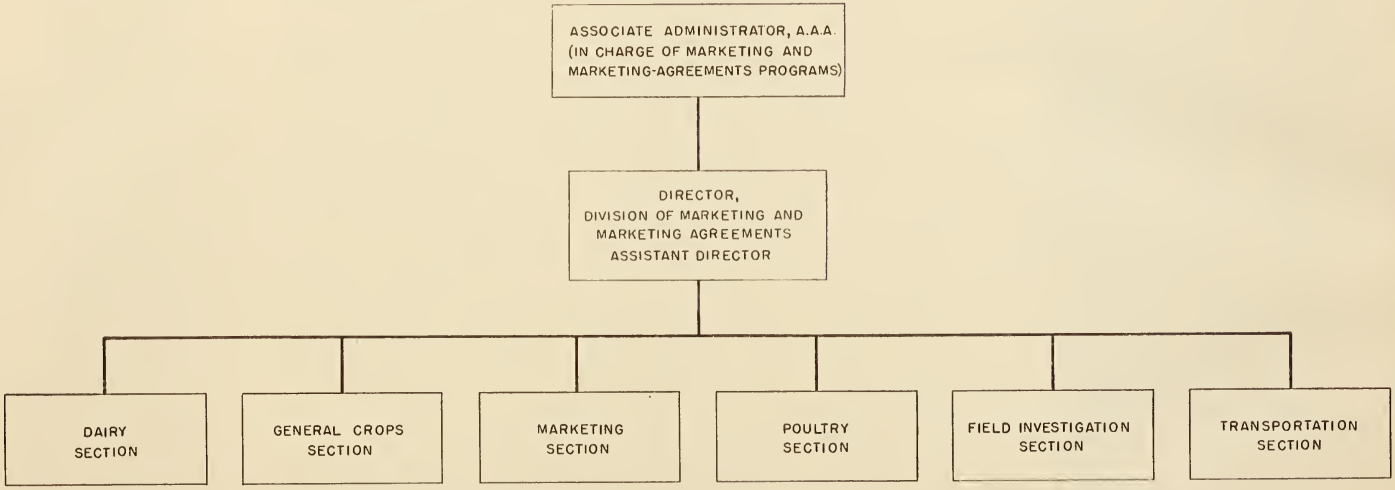
DIVISION OF MARKETING AND MARKETING AGREEMENTS



DIVISION OF MARKETING AND MARKETING AGREEMENTS

The Division of Marketing and Marketing Agreements is concerned chiefly with the development of programs which are designed to encourage the orderly marketing of agricultural commodities and which serve to relieve or prevent the clogging of normal market channels.

Such programs include marketing agreements and orders under which the marketing of a commodity in interstate or foreign commerce may be adjusted more nearly in keeping with market requirements, and surplus-removal programs under which surpluses are diverted to by-product and other domestic outlets, exported, or used for distribution to needy families to encourage domestic consumption.

These programs are developed in the Division of Marketing and Marketing Agreements. Program based on the removal of surpluses through encouraging increased consumption among low-income families, and certain types of export programs are carried out by the Federal Surplus Commodities Corporation under the authorization of the Secretary of Agriculture.

Agricultural marketing-agreement programs, capable of application to all handlers of the commodities concerned, were first authorized by the Agricultural Adjustment Act of 1933. The act provided for marketing programs which embodied principles evolved in more than 20 years of effort and experience on the part of cooperative organizations of growers, or of growers and handlers, seeking stabilized marketing conditions, adjustment of shipments to market demand, and better returns to growers. Unsupported by Federal law, these programs lacked the means for completely effective dealing with noncooperating groups who were in position to defeat a plan intended to benefit an entire industry.

The act of 1933 authorized the Secretary of Agriculture to enter into agreements with processors, associations of producers, producers, and others, and to issue licenses concerning the handling of agricultural products in interstate and foreign commerce.

Amendments to the act in 1935 made the provisions for marketing-agreement programs more specific as to terms and conditions. The amendments also provided for orders instead of licenses to supplement marketing agreements, and limited the issuance of orders for designated agricultural products.

In 1937 the Agricultural Marketing Agreement Act was passed by Congress and approved by the President, to clarify the legal status of marketing programs. This status had been questioned in some of the lower courts because of the United States Supreme Court decision of January 6, 1936, in the Hoosac Mills case invalidating the production-control and processing-tax features of the original Agricultural Adjustment Act. Marketing agreement and order provisions of the Agricultural Adjustment Act as amended in 1935 were reenacted and

further amended by the Agricultural Marketing Agreement Act of 1937 as separate legislation.

The Marketing Agreement Act of 1937 authorizes the Secretary of Agriculture to enter into marketing agreements with processors, handlers, and producers of certain agricultural commodities. Marketing agreements are designed to improve returns to producers by stabilizing and improving marketing conditions, and to provide for the elimination of unfair trade practices and unfair methods of competition.

The act provides for marketing programs, one for milk and its products, and others for specified commodities, primarily fruits and vegetables.

Under certain conditions the Secretary of Agriculture is empowered to issue orders which embody the terms and conditions of the agreements and which complement the agreements. When two-thirds of the producers affected favor such action, the Secretary of Agriculture may issue marketing orders complementing marketing agreements for the following commodities or products thereof: Milk, fruits (including pecans and walnuts, but not including fruits for canning, except olives), tobacco, vegetables (not including vegetables for canning, except asparagus), soybeans, naval stores (including refined and partly refined oleoresin, but not products of naval stores), hops, honeybees (but not their products), and apples produced in Oregon, Washington, and Idaho.

Initiation and development of marketing-agreement programs is largely the responsibility of the various industries concerned.

Marketing-agreement programs for fruits and vegetables are administered by committees of growers and handlers. The committees are selected by the Secretary, ordinarily from nominees chosen by the industry. The administrative committees supervise operation of the programs, and recommend to the Secretary the regulations which are to govern the marketing of the commodity.

Through regulatory measures, marketing-agreement programs for fruits and vegetables encourage the orderly marketing of a commodity over an entire season and assist the industry involved in stabilizing the market and the price.

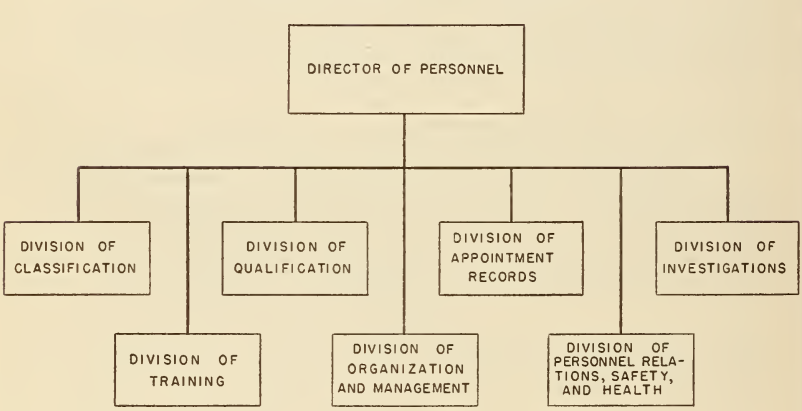
Milk-marketing-agreement programs are administered by a market administrator appointed by the Secretary of Agriculture. These programs establish minimum prices which handlers are required to pay producers for milk and provide for a method by which payments are made.

Funds and authority are provided for removing burdensome surpluses of agricultural commodities from ordinary market channels, and for encouraging and stimulating domestic consumption and export of these commodities. Section 32 of Public, No. 320, 74th Congress, as amended, makes available to the Secretary of Agriculture an amount equivalent to 30 percent of annual customs receipts for surplus-removal activities. Additional funds are provided by other legislation.

Programs involving the use of Federal funds in dealing with surpluses are frequently coordinated with the efforts of an industry to improve selling conditions through marketing-agreement programs or by other means.

Diversion programs seek to develop new uses and new outlets for agricultural products and take out of regular channels of trade substandard grades of commodities which might affect the price for standard grades. Export programs, in general, seek to hold a fair share of the world market for United States exports.

Surplus-removal programs are also operated to remove excess supplies from markets and to make the commodities available to low income, needy families who otherwise would not be able to obtain adequate supplies.


OFFICE OF PERSONNEL
DIRECTOR OF PERSONNEL
DIVISION OF CLASSIFICATION
DIVISION OF QUALIFICATION
DIVISION OF APPOINTMENT RECORDS
DIVISION OF INVESTIGATIONS
DIVISION OF TRAINING
DIVISION OF ORGANIZATION AND MANAGEMENT
DIVISION OF PERSONNEL RELATIONS, SAFETY, AND HEALTH

OFFICE OF PERSONNEL

In 1934 the Secretary of Agriculture reorganized the former Office of Personnel and Business Administration, which had been in existence since 1925, and established the Office of Personnel as a separate unit under a director. The Director of Personnel is the general agent and representative of the Secretary of Agriculture in all matters that pertain to personnel management. He is responsible for organization, classification, recruitment, training, and discipline, and has general oversight and supervision over all other related employment matters. He advises the Secretary and is directly responsible to him. He represents the Department in its contacts with the Civil Service Commission and other agencies on personnel affairs. The Office of Personnel under his direction seeks to provide a clear frame of reference for departmental personnel management, which will serve as a guide for unified policy and procedure to managing officials in all units of the Department.

As of May 1, 1939, the Department had 21 bureaus and offices with line functions, and 12 offices with chiefly staff functions. Its personnel includes 67,478 full-time employees, 15,455 part-time employees, and 10,531 cooperative employees, engaged in almost every known profession and occupation. About 12,000 persons, or less than one-seventh of the total, are stationed in Washington. The remainder are scattered among approximately 2,600 field stations and offices throughout the United States and elsewhere. Roughly, 75 percent of the full-time employees are recruited through civil service, together with many of the part-time employees. Of the remaining 25 percent, many are employed cooperatively with the States and various units of local government.

From the foregoing, the scope of personnel management in the Department, and the size of the job of keeping proper employment records, can be visualized. For example, all recommended appointments and changes of employee status, such as transfers or promotions, come to the Office of Personnel for final disposition from the staff and operating agencies. In 1938 the Office of Personnel acted on 117,040 such cases, each of which involved an individual employee of the Department. Personnel management, therefore, combined centralized functions with a decentralized system of administration with ramifications throughout the Department. Hence, personnel management is a definite part of administrative supervision, and its efficiency depends greatly on the extent to which line supervisors know and apply the established personnel procedures. Basic functions of the Office of Personnel, acting for the Secretary, are to encourage uniformity in the Department's personnel work, to improve the quality of it, and to assure the greatest measure of just treatment to the individual employee.

The Department's personnel program emphasizes the greatest possible delegation of responsibilities "down the line" and seeks to have it clearly understood that substantial personnel responsibilities are an integral part of the managerial functions of every executive, from the chief administrators to the supervisors of the smallest units. To delegate generously, but to follow that delegation by a constant flow of education, stimulation, and assistance is basic to the Department's personnel program. Obviously, it must be one of mutual cooperation between the bureaus and the Office of Personnel, and of active assistance to the Civil Service Commission and other authorities to insure adherence to laws and regulations on all personnel matters.

Bureau personnel officers, to whom is delegated a large measure of responsibility for administering the personnel program within their units, serve as bureau spokesmen when personnel problems arise, and deal with the Office of Personnel for their respective bureaus.

The administrative machinery in the Office of Personnel designed to make the personnel program effective consists of five major divisions which report to the Director, who is assisted by a small research and clerical staff.

The Division of Classification, Planning, and Survey is responsible for investigating and recommending grade allocations for all positions in the Department, both in Washington and in the field, which are subject to the provisions of the Classification Act of 1923, as amended. It conducts classification audits of organizational units and audits of occupational groups and particular classes of positions across organizational lines with the view to maintaining uniform classification levels throughout the Department to insure, insofar as possible, adherence to the principle of equal pay for equal work. It investigates appeals for reallocation, and coordinates, prepares, or assists in the preparation of class specifications. It cooperates with, and advises staff and operating officials in the solution of their classification problems and represents the Department in contacts with the Civil Service Commission on all classification matters. It studies existing and proposed organizational structures, the alignment and coordination of functions, lines of authority, flow of work, and work-load distribution, and on the basis thereof develops and recommends plans and methods for improving organization management. It cooperates with staff and operating officials in organization matters incident to the consummation of mergers, transfers, additions, discontinuances, and revisions of functions. It also prepares and maintains organization charts of all staff and operating agencies in the Department.

The Division of Qualification and Training stimulates, develops, and coordinates a recruiting program for the Department. It reviews, as necessary, the qualifications of all persons recommended for formal secretarial appointment or for change of status to maintain proper qualification standards for the various classes of positions in the Department. It receives applications from persons outside the Department, and from those within it who seek transfer or promotion, and operates an intradepartment placement service. The Division of Qualification and Training also arranges with the Civil Service Commission for the conduct of civil-service examinations to secure eligibles for vacancies in the Department. When notified of a vacancy by the personnel offices in the staff and operating agencies of the

Department, it refers the names of qualified eligibles now in the employ of the Department, or secures certification from the Civil Service Commission's most appropriate eligible register. The Division of Qualification and Training likewise negotiates with the Civil Service Commission for authority to make such other employment adjustments as require its approval. In addition, it aims to bring about consistent and fair procedures for transfer and promotion on a department-wide basis. One of the primary responsibilities of the Division of Qualification and Training is to encourage and furnish advice regarding programs of employee training.

The Division of Appointment Records scrutinizes recommended appointments, transfers, promotions, demotions, resignations, reinstatements, removals, retirements, leave, furloughs without pay, and separations for discrepancies with respect to the Civil Service Act, and the rules and regulations thereunder. It also is responsible for such actions in the Department insofar as they are affected by the Retirement Act, as amended, by administrative and fiscal regulations, and by decisions of the Comptroller General. The Division of Appointment Records keeps cumulative permanent records of all personnel actions of the type referred to above, maintains complete personnel files of all Department employees, preserves and interprets leave records, prepares and maintains machine-tabulation cards for statistical, qualification, and leave purposes, and renders service in this connection for the entire Department.

The Division of Personnel Relations, Safety, and Health administers procedures established for the adjustment of employee grievances. It arranges for the interview of supervisors and employees concerned, investigates their statements, and recommends appropriate administrative action. In addition, the Division of Personnel Relations, Safety, and Health develops and coordinates programs for safety, health, and welfare services in the Department, and otherwise sponsors activities which will contribute to good employee morale.

The Division of Investigations' work consists mainly of conducting investigations of alleged irregularities and misconduct and submitting reports thereof, and reviewing disciplinary cases. Investigations are conducted in the field or in Washington for the various bureaus of the Department, and include (1) personnel investigations, involving improper conduct on the part of employees, (2) investigations of alleged fiscal irregularities, (3) periodical inspections of field stations and offices, (4) investigations of alleged violations of regulatory laws administered by the Department, and (5) special investigations.

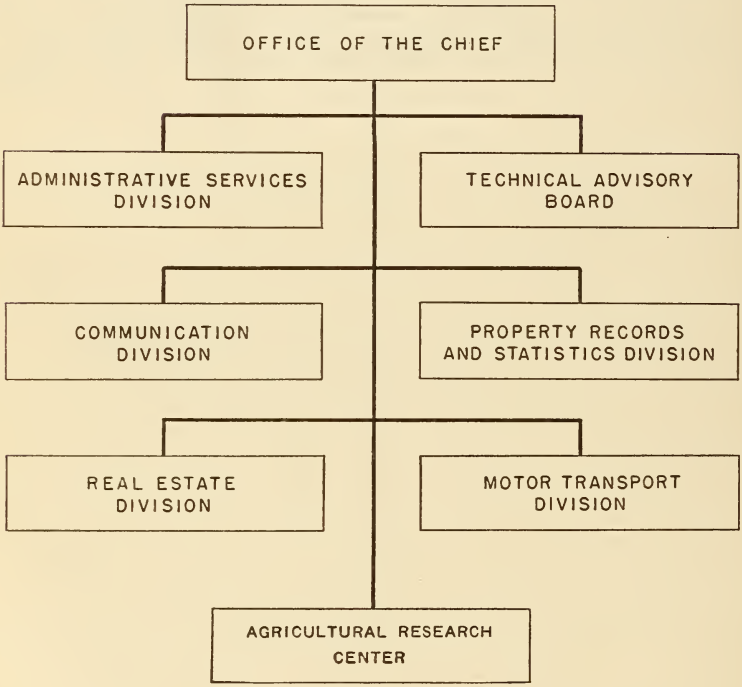
The reviewing of disciplinary cases involves the examination of files submitted by the various bureaus with recommendations for disciplinary action, and the preparation of review memoranda for consideration by the Director of Personnel, in which he is informed whether sufficient evidence has been submitted to determine the degree of turpitude on the part of the employee, and whether the action recommended is in line with action previously taken in comparable cases.

When a final determination is made with respect to the action to be taken, the Division of Investigations prepares the necessary documents, including letters of reprimand (which may or may not involve suspensions from duty without pay for specified periods) and letters

of charges. In cases where charges have been preferred, the answers are weighed against the evidence, and the Director of Personnel is informed whether the charges appear to be sustained. If it is determined that the charges have been sustained and that removal from the service is warranted, letters of decision, ordering the employees' removal from the service, are prepared in the Division.

The Director of Personnel is chairman of the general administration board for the Department Graduate School, and of the Department In-Service Training Committee. The Director also is a member of the Committee on Departmental Coordination, and the Special Land-Grant College and Department of Agriculture Committee on Training for Government Service. As the representative of the Department on the Council of Personnel Administration, the Director assists in the planning of improved personnel administration in the Federal Service. The Office of Personnel is, in addition, represented on the Federal Inter-Departmental Safety Council, of which a subcommittee formulates safety codes, rules, and regulations for the Department of Agriculture.

OFFICE OF PLANT AND OPERATIONS



OFFICE OF PLANT AND OPERATIONS

In order to meet the expanding needs of the Department, the former Division of Operation has been changed to the Office of Plant and Operations, and its functions have been greatly enlarged. The change has been effective since March 1, 1939. General supervision of the Techinical Advisory Board and the departmental service and management functions of the Agricultural Research Center at Beltsville, Md., have been transferred to this Office.

The Technical Advisory Board concerns itself with problems incident to the procurement of varying types of equipment, such as automotive and other heavy equipment; aerial, photographic, and other optical equipment; and other types where engineering principles may be involved; also, with the selection, operation, maintenance, and repair of such equipment; also the location of repair depots, photographic laboratories, etc., to serve the Department as a whole. In addition, the board is responsible for studies to evaluate the needs, use, maintenance, and disposition of equipment, and to establish uniform standards and criteria in connection with aerial photography.

The satisfactory housing of the bureaus located in Washington has long been a difficult problem, and for a number of years a space committee has been in charge of this work. However, as of March 1, 1939, the responsibility for the housing of departmental activities, both in Washington and in the field, including long-range planning and active prosecution of approved projects of this type, study of consolidation of the operating plants, space control and assignments, repairs, property management, leases, and other related matters, has been placed upon the Office of Plant and Operations.

The Motor Transport Service is responsible for the repair and servicing of all motor vehicles operated by the Department in the District of Columbia, as well as other departmental automotive equipment when used in an official capacity for travel in Washington. This organization is also responsible for the transportation of official mail, supplies, and other types of drayage services.

The Office of Plant and Operations is authorized to exercise control of the fiscal and personnel matters relating to the Office of the Secretary, which includes the Offices of Budget and Finance, Personnel, Plant and Operations, Land Use Coordination, and Marketing and Regulatory Work.

The leasing of office, laboratory, and storage space for the Department is conducted through this Office, which is authorized to prepare specifications, examine and accept bids for quarters, prepare leases and, after approval by the Solicitor, to execute the leases on behalf of the Department.

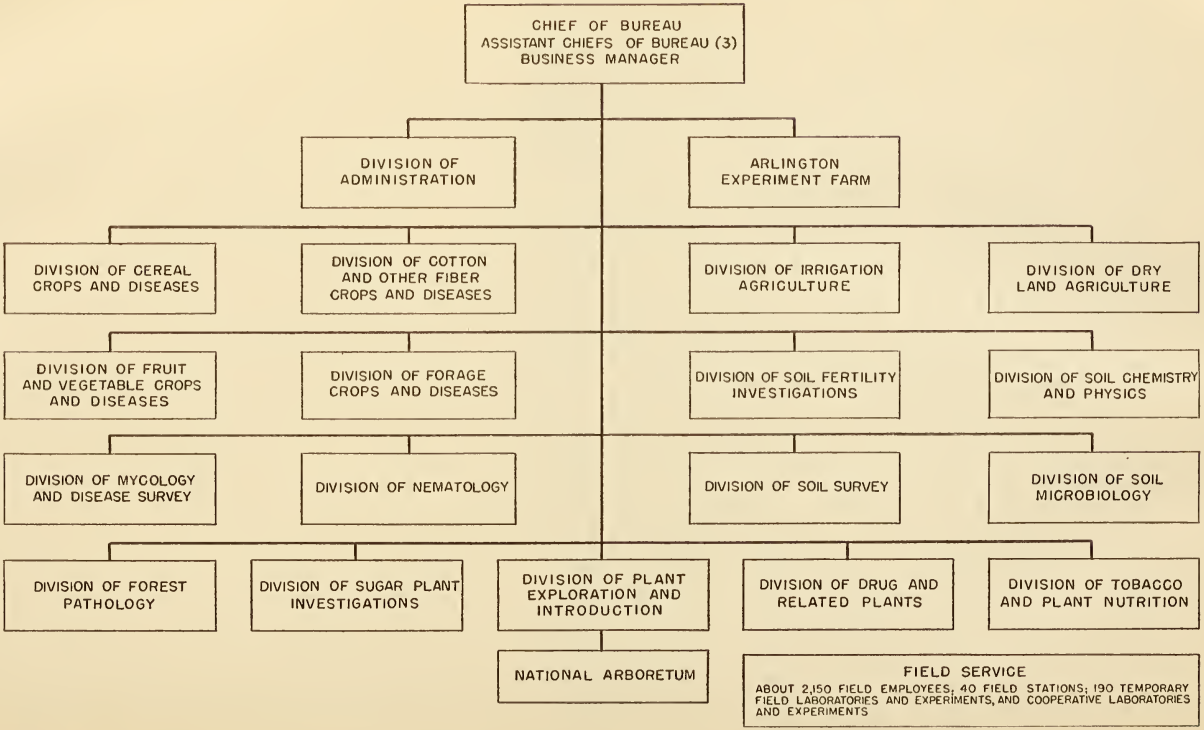
An innovation, which it is believed will be far reaching in its results, is the establishment within this Office of a Communications

Division. It is responsible for the operation of the Department's post office, and for the maintenance of a central file station to keep custody of all official correspondence, records, and documents of the Office of the Secretary. It maintains file substations conveniently located for various offices, and plans and develops a uniform system of file operations for the entire Department. The Communications Division is responsible also for the operation of the telephone and telegraph systems of the Department. It acts in an advisory capacity to all the bureaus on these functions, and maintains an information desk service.

The office of the general superintendent of the Agricultural Research Center at Beltsville, Md., acts as a service and coordinating organization to furnish and supervise the common facilities on an area of approximately 12,461 acres in Prince Georges County, near Beltsville. It supervises the work projects of three Civilian Conservation Corps camps, operates a central mechanical and repair shop, tills the land, plants and harvests feed crops, operates a central sewage-disposal plant and a granary, purchases electrical energy and maintains the necessary transmission lines, operates a central switchboard with direct lines to the Department of Agriculture and the Washington exchange, receives and delivers mail, hauls surplus products to Washington, and supplies guard and janitor service for the seven bureaus of the Department that do research work at the center.

Reimbursement for the major portion of the work furnished the various bureaus is obtained on an actual cost basis, the Division of Operations performing the work and the Division of Office Management carrying on the cost-accounting and fiscal work, all under the direction of the general superintendent. During emergency construction programs, there is also set up a Division of Construction under the jurisdiction of the general superintendent.

BUREAU OF PLANT INDUSTRY


CHIEF OF BUREAU
ASSISTANT CHIEFS OF BUREAU (3)
BUSINESS MANAGER
DIVISION OF ADMINISTRATION
ARLINGTON EXPERIMENT FARM
DIVISION OF CEREAL CROPS AND DISEASES
DIVISION OF COTTON AND OTHER FIBER CROPS AND DISEASES
DIVISION OF IRRIGATION AGRICULTURE
DIVISION OF DRY LAND AGRICULTURE
DIVISION OF FRUIT AND VEGETABLE CROPS AND DISEASES
DIVISION OF FORAGE CROPS AND DISEASES
DIVISION OF SOIL FERTILITY INVESTIGATIONS
DIVISION OF SOIL CHEMISTRY AND PHYSICS
DIVISION OF MYCOLOGY AND DISEASE SURVEY
DIVISION OF NEMATOLOGY
DIVISION OF SOIL SURVEY
DIVISION OF SOIL MICROBIOLOGY
DIVISION OF FOREST PATHOLOGY
DIVISION OF SUGAR PLANT INVESTIGATIONS
DIVISION OF PLANT EXPLORATION AND INTRODUCTION
DIVISION OF DRUG AND RELATED PLANTS
DIVISION OF TOBACCO AND PLANT NUTRITION
NATIONAL ARBORETUM
FIELD SERVICE
ABOUT 2,150 FIELD EMPLOYEES, 40 FIELD STATIONS; 190 TEMPORARY FIELD LABORATORIES AND EXPERIMENTS, AND COOPERATIVE LABORATORIES AND EXPERIMENTS

BUREAU OF PLANT INDUSTRY

The Bureau of Plant Industry was organized in 1901 by the consolidation into one unit of the eight divisions of the Department then concerned with plant and crop problems. Additional lines of work have been added during the years that followed. The activities of the Bureau are now devoted wholly to plant and soil research.

The purposes of this research are (1) to solve the technical problems that confront the farmer in growing, handling, transporting, and utilizing crops and determining the best use of the soil consistent with economical production and conservation, and (2) to develop scientific facts upon which such solutions depend. The work of the Bureau covers all important field, orchard, and garden crop plants, including cereals, forage, fiber, fruits, vegetables, sugar, tobacco, drugs, oils, and rubber, as well as pasture plants, ornamentals, weeds, seeds, microscopic organisms in soils and plants, and diseases of forest trees.

Determinations are made of the kind, yield, and quality of plants that can be produced under alternative systems of management on the various types of soil, and of the influence of these systems of management on the long-time productivity of the soil. These researches involve experiments with fertilizers, crop rotations, irrigation, tillage methods, and similar technique with the important soils. Surveys are conducted, on the basis of which the soils of the country are classified and mapped. This work provides a basis for the interpretation and extension of the results of other soil research and for agricultural land use planning.

Investigations are conducted at Washington and at some 200 experiment stations and testing fields, mostly in cooperation with State agricultural experiment stations, located in important agricultural areas throughout the country. Problems of joint interest such as land classification, relationship between soil type and the quality of food plants, and quality tests of cotton, wheat, and barley are investigated cooperatively with other bureaus of the Department.

Early work of the scientists[1] of the Bureau aided materially in establishing the culture of many new crops, including the navel orange, hard winter wheat, durum wheat, Sudan grass, crested wheatgrass, Egyptian cotton, dates, early varieties of oats, and adapted varieties of soybeans. Better methods for the control of various destructive plant diseases and for the transportation and storage of fruits also were developed.

Most of the current investigations of the Bureau may be grouped under the following general topics: (1) Breeding, improvement, and

[1] The Yearbooks of Agriculture for 1936 and 1937 explain the development of plant-breeding work in this country, and the Yearbook of 1938 discusses the soil work in considerable detail.

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introduction of crops; (2) the control of plant diseases; (3) studies of the growth of crop plants and of the quality of their products in relation to variety, climatic environment, soil conditions, and cultural practices; (4) determining the characteristics, productivity, capabilities for use, and location of the important types of soil; (5) determining the best methods of management of soil types, consistent with economical production and conservation, including methods of tillage, fertilization irrigation, and rotation of crops; and (6) storage, transportation, and utilization of crop products.

CROP IMPROVEMENT AND INTRODUCTION

An important phase of the Bureau's research is the improvement of crops in disease resistance, yield, quality, adaptation, and resistance to insect injury in order to provide more stable and economical production, by the introduction, breeding, testing, and distribution of new varieties. Many such improved varieties are now in widespread culture, but breeding work continues because perfection is never achieved and new requirements are constantly arising and must be met. Plant material is introduced from abroad for testing and adaptation as new crops or for use in the breeding investigations or in soil-erosion control. Explorers are sent to various parts of the world to search out plants that may be useful in American agriculture.

A cooperative program to develop superior corn hybrids, in progress about 17 years, was begun before hybrid seed corn was available commercially. Numerous new productive hybrids have been obtained, and methods of producing hybrid seed so developed that about 15 million acres of corn were planted with hybrid seed in 1938. A substantial portion of the lines from which this hybrid seed was produced were developed in the cooperative breeding and testing program. Wheat-breeding experiments have resulted in obtaining several commercially important smut-resistant varieties, including Rex, Relief, and Hymar. The hazard from stem rust in the spring-wheat States is being largely eliminated since the development of the resistant variety Thatcher, which was grown on nearly a million acres in 1938. Other promising hybrid wheats, even more rust-resistant than Thatcher, are being tested at various field stations.

Sugarcane production, which faced extinction a few years ago, owing to the ravages of mosaic and other diseases, has been revived by the development and distribution of new disease-resistant varieties.

Nearly one-half million tons of cane sugar are produced annually, almost wholly from new varieties developed in the Department's cooperative program. The breeding of sugarcane is being continued to secure additional disease resistance, cold resistance, and improved keeping quality. Likewise the sugarbeet industry has been restored in the far Western States where the curlytop disease was destroying the crop. This has resulted from the breeding of resistant varieties such as U. S. 1, U. S. 34, U. S. 33, and U. S. 12. In order to utilize these improved varieties it was necessary to establish a sugarbeet seed industry in the southwestern part of the United States, because previously nearly all seed was imported. A method of production, which had been developed by earlier cooperative research, in which seed was produced from fall planting and the roots overwintered in the field was largely adopted. By 1938, 70 percent of the country's require-

ments were supplied by domestic sugarbeet seed. Additional research is being devoted to the elimination of bolting in sugar beets and breeding for resistance to leaf spot.

Introduction followed by subsequent breeding has been responsible for the varieties on which the American-Egyptian extra-long-staple cotton industry is based, and for the very widely grown Acala variety of upland cotton, of which 1 million bales are produced annually.

The United States Regional Vegetable Breeding Laboratory was established at Charleston, S. C., in 1937, where breeding work is in progress with the more important vegetables in that region to further the development of vegetable varieties better suited to the needs of the Southeastern States.

The development of vegetables resistant to destructive diseases includes several tomato varieties resistant to verticillum wilt, thereby preventing losses estimated at $200,000 annually, others resistant to nailhead rust, resulting in annual savings to growers of an estimated $250,000, and still others more resistant to various leaf and other diseases than most of the older sorts. These disease-resistant varieties include the Marglobe, the Break o'Day, the Pritchard, and the Glovel. Several strains or varieties of disease-resistant lettuce have been developed, which are of great regional value in the Imperial Valley and other lettuce-producing areas in the Southwest because they virtually saved the great lettuce industry of that region. Powdery Mildew-Resistant Cantaloup No. 45, a variety resulting from planned breeding, saved the cantaloup industry of the Imperial Valley. More than 11,000 acres, a large part of the country's early cantaloup supply, were planted to this variety in 1938.

As a result of breeding, four improved varieties of peaches have recently been introduced to the trade. Ellis and Sanford, valuable as clingstone canning peaches; Leeton and Maxine, yellow-fleshed, freestone shipping varieties; and three others (Penryn, an early dessert freestone; Nestor, superior for drying; and Ferida, an early ripening canning peach) are now being released to the trade. All these varieties have been extensively tested in California.

Two varieties of almonds (Harpareil and Jordanolo), developed in cooperative breeding work, were released in 1938. Jordanolo is already widely recognized as being superior in most important particulars to any variety now grown in California.

The improvement of forage crops by breeding grasses and legumes is now under way on an extensive scale. Progress previously has come largely from the introduction of foreign varieties such as Turkestan alfalfa (resistant to bacterial wilt), Ladak alfalfa from India (resistant to drought and cold), creeping alfalfa from Turkey (a promising pasture type), Ladino white clover from Italy (an important pasture plant under irrigation), strawberry clover from France (a pasture plant for saline soils), Korean lespedeza from Chosen, perennial lespedeza from China, and Austrian Winter peas from Austria.

Other important contributions to the plant industries of the United States have been made by the Bureau's foreign plant exploration and introduction service. The Washington Navel orange became the foundation of the great California orange industry. Many of the country's leading varieties of wheat, oats, rye, and barley are derived from introductions from the Soviet Union, Australia, and elsewhere.

Our rice industry is based almost entirely on introduced varieties. Several thousand varieties of soybeans, mostly from the Orient, have been brought in and tested to develop those best suited to this country. Introductions of dates and figs have built up important industries in the Southwest. Sudan grass and Rhodes grass are valuable contributions from Africa. The Chinese elm has become important as a shade and ornamental tree on the Great Plains. Oriental chestnuts, resistant to blight, are being propagated to replace the vanishing American chestnut. Valuable additions also include the tung tree, many kinds of bamboos, the Quetta nectarine from Baluchistan, the Meyer Chinese dwarf lemon, several varieties of avocado, feterita from Egypt, and many sorts of apples, pears, peaches, plums, strawberries, and oriental persimmons. Special attention is now being given to the discovery and introduction of vegetable breeding material and of plants suitable for pastures and the prevention of soil erosion.

As an aid in planning and executing breeding experiments, the geneticists and cytologists of the Bureau investigate the mode and internal mechanism by which various characters of crop plants are transmitted to their progenies.

CONTROLLING PLANT DISEASES

Plant diseases not amenable to control by the breeding of resistant varieties because adequate resistance has not been discovered or developed must be controlled by other methods, such as spraying. Among such diseases are many that attack fruits. Extensive tests of new chemicals, including copper phosphate, as fungicides, are pointing the way to more effective disease control. Other research covers new methods of controlling blue mold in tobacco beds by benzol and paradichlorobenzene gases and copper oxide-oil sprays. Smuts in grain crops are being controlled more effectively following tests of new fungicides, such as ethyl mercury phosphate. In order to provide a sound basis for controlling plants diseases, extensive pathological research on the disease organisms, including their characteristics, physiologic races, life history, development, and host range, is being conducted. This research includes studies of virus diseases that attack a wide range of crop plants and that now appear to be due, not to microorganisms, but to ultramicroscopic protein bodies in the plant cells. Beneficial and injurious micro-organisms and nematodes in plants and soils are being investigated, and methods are being developed for controlling harmful forms and for promoting nitrogen-fixing bacteria.

GROWTH AND QUALITY INVESTIGATIONS

Research is conducted to establish the relationships between the nature of soil types and the quality of food plants that may be grown on them as a basis for improving quality through the selection of crops for specific soil types and through proper fertilization. The relationship between soil composition and the mineral composition of plants is being given special emphasis, since it is known that many diseases of animals and humans are caused or aggravated by excesses or deficiencies of certain minerals in the diet.

Studies of crop plants under both normal and artificially controlled conditions are showing the important influences of different temperatures, day lengths (photoperiods), and other factors in deter-

mining the time of flowering and fruitfulness of the plant. The results obtained aid in determining the proper requirements and adaptation for crop varieties.

Other research involves the effects of hormones (growth-promoting substances) on plant development and on stimulating root formation on plant cuttings. Various crop plants are being treated with the alkaloid colchicine and with X-rays, ultraviolet rays, radium, heat, and cold, which induce changes in the heritable characters of the plant, as a means of developing new varieties and even new species.

Cooperative studies are showing important influences of environment and variety on the spinning quality of cotton. Improvement in cotton quality, and particularly in the uniformity of the fiber, is being brought about by the establishment of one-variety communities. In 1937 there were 814 such communities in 343 counties in 14 States, producing 1,863,692 bales of cotton. The improved quality increased the returns to growers an average of $2.50 per bale.

The factors determining the quality of wheat for making bread, macaroni, and pastry are being determined in three cooperative laboratories. Studies of the causes of deterioration of wheat in storage also are in progress. Other similar research involves quality determination of barley for malting, rice for cooking, and flax for oil manufacture, and the effect of storage conditions on the viability of seeds. Nearly all new field, orchard, and garden crop varieties are subjected to quality tests before they are released to growers.

CLASSIFICATION AND MAPPING OF SOILS

Forty years ago the tremendous project of classifying and mapping all the soils of the United States and its possessions was undertaken.

The objects of this project are to identify soil types in the field, to determine their morphological, chemical, and other characteristics, to show their distribution upon maps, and to indicate their use-capabilities under alternative systems of management. The surveys are supplemented by chemical and physical examination of soils in the laboratory to determine their constitution, especially in respect to excesses and deficiencies of plant nutrients and those physical properties that influence moisture movement and root development, and by field experiments to determine the responsiveness of different soils to cultural practices. Since the inauguration of this work somewhat more than a billion acres of land have been surveyed and mapped, including soils in every State and in Alaska, Hawaii, and Puerto Rico. A great deal remains to be done, both in mapping and in determining the responsiveness of the soils to cropping and cultural practices, fertilization, tillage, and erosion control. Consistent progress is being made in the development of a system for rating soil types and phases according to their productivity and crop adaptability. These ratings are based upon past crop performance, as well as upon data obtained from experiments conducted by Federal and State agricultural experiment stations.

The ultimate purpose of the soil survey is to provide a factual basis for planning rational rural land use, including the development of irrigation and flood-control projects, control of soil erosion, and land appraisal.

CULTURAL AND MANAGEMENT PRACTICES

The determination of the responsiveness of different types of soil to management practices, including tillage, fertilization, crop rotations, and irrigation, and the determination of the best cultural practices for crops are also an important part of the Bureau's research program.

Tillage and rotation experiments of the Bureau in the dry-land regions furnish the basis for planning the agriculture of those regions severely afflicted in recent years by drought and soil blowing. Studies of soil-moisture penetration and utilization under the various cultural methods tried out in these experiments provide means of anticipating and partly eliminating crop risks in dry farming. Cropping and water-usage studies, involving crops, soils, rotations, and fertilization, as well as the quantity and quality of the irrigation water that is applied, furnish the information necessary for a stable agriculture on irrigated lands of the West, where soil depletion, excessive salt accumulation, and a rising water table may quickly become detrimental.

Soil fertility and fertilizer requirements of the principal soil types and agricultural regions are now being determined for many important crops. The maintenance of soil fertility is fundamental to the welfare of the individual farmer, the community, and the Nation as a whole. Results achieved through tests with new fertilizer materials and new concentrated fertilizers have produced changes in fertilizer practices, manufacture, and distribution. Improvements in potash fertilization have saved potato growers 500,000 annually. The Bureau's investigations of magnesium deficiency in several of the leading potato-producing sections have led manufacturers to incorporate some form of available magnesium in potato fertilizers to eliminate the heavy losses caused by a lack of magnesium. The discovery of the response of sugar beets to phosphate increased the returns to growers nearly $5,000,000 annually. Field tests are showing similar responses to phosphates of other crops, notably alfalfa, in regions of the West where yields are declining.

Research is showing that boron, manganese, magnesium, zinc, copper, and several other elements are important additions to the list of necessary plant nutrients. Research to determine the distinctive symptoms on the tobacco plant characteristic of the deficiency of any one of the several chemical elements essential for growth is advancing the knowledge of the functions of these elements in plant growth, and of the fundamentals of sound fertilizer practice. A refined technique, using highly purified chemicals and plant microorganisms, has added to the list of elements required in extremely small amounts by members of the plant kingdom.

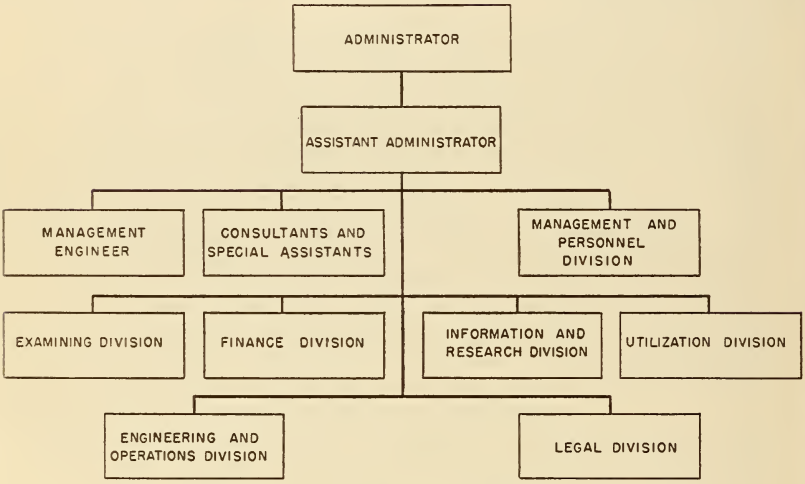
Studies are made of the causes of nonfertility of certain soils and of the distribution of selenium and other elements that are detrimental in soils. The investigation of the selenium content of soils and its relation to toxicity of vegetation grown thereon has shown that this element is present in quantities large enough to make it an agricultural problem in the soils and vegetation of parts of the United States. Investigations are also made on other rare and secondary elements in soils, on the value of quick chemical tests for soils, on the chemical structure of peat, and on the value of peat as a soil amendment.

STORAGE, TRANSPORTATION, AND UTILIZATION

Fruit and vegetable handling, transportation, and storage investigations of the Bureau have resulted in substantial savings to growers and shippers. It was found that by proper handling, adequate precooling, and effective manipulation of car ventilators, oranges could be shipped from California to eastern markets without icing, thereby cutting costs about $1,000,000 a year. Elimination of losses, amounting to around $200,000 a year, in the shipment of apples and pears was found possible through the simple expedient of using resilient corrugated cardboard lines in the boxes, thus preventing injury to the lower layer of fruit frequently attributed previously to freezing when the injury occurred in shipments made during the winter season.

Studies of the Kieffer pear have resulted in improving its palatability remarkably. When harvested at the proper time and ripened at a temperature of 60° to 65° F., at a relative humidity of 85 to 90 percent, the otherwise coarse-grained, rather flavorless fruit becomes quite palatable, and when canned is closely comparable to the well-known Bartlett pear.

RURAL ELECTRIFICATION ADMINISTRATION



RURAL ELECTRIFICATION ADMINISTRATION

Primarily, the Rural Electrification Administration makes loans for building distribution lines to take electricity to farmers who are able to pay for service but are without it.

Established as an emergency agency on May 11, 1935, by Executive order of President Roosevelt, the Rural Electrification Administration was charged with the responsibility of a 10-year program by the Rural Electrification Act of 1936. Under the terms of the Second Reorganization Plan, Rural Electrification Administration, theretofore an independent office, became a unit of the Department of Agriculture on July 1, 1939.

Rural Electrification Administration makes long-term loans, at the same rate of interest paid by the Government on its long-term obligations issued during the fiscal year preceding that in which the loans are made, chiefly to farmers' cooperatives, but also to public power districts, private utilities, and other agencies, for the entire cost of building electric-distribution systems in rural areas. The lines bring energy to the farms from the nearest power source, usually a private utility or municipal generating plant or transmission line. Additional loans, where needed, help to finance the wiring of the farmsteads and the installation of plumbing systems. These latter loans are payable within 3 to 5 years.

The Administration proposed rural-distribution-line projects for economic and engineering feasibility. When loans are made to cooperatives or other newly formed agencies, it aids in perfecting an adequate organization both for construction and operation. It makes allotments for approved projects and controls the disbursement of funds from the United States Treasury. It helps borrowers to find engineers, contractors, and sources of power. And its engineers review construction plans and contracts.

After projects go into service they are assisted with their problems of management and operation. Rural Electrification Administration specialists help the farmer members to make the fullest and most effective use of electricity. Field auditors examine books and give counsel on financial problems.

These last three functions—management assistance, utilization or "load building," and field auditing—not only help the farmer users but serve more particularly to trim expenses and build revenues to pay out the loans.

More generally, and within the limits of its authority and resources, Rural Electrification Administration acts as a coordinator of national effort in its field, as a clearing house for principles and practices, and as a catalytic agent.

PROJECTS IN ALMOST ALL TYPE-OF-FARMING AREAS

Since the establishment of Rural Electrification Administration as an emergency agency in 1935 and the subsequent laying down of a long-term program of rural electrification by the Congress in 1936, it has encouraged and guided the development of projects in virtually every type-of-farming area. Projects have been set up from the Wheat Belt to the Cotton Belt and over most of the States from Florida and Maine to California and Puget Sound. They lie in such diverse localities as an Indian reservation in Arizona, the Amana Colony in Iowa, and the probable site of Sir Walter Raleigh's Lost Colony in North Carolina. Thirty miles off the coast of North Carolina, on Ocracoke Island, one project serves a village of little more than a hundred families, virtually all of them fisherfolk and coast guardsmen.

While the launching of projects has gone forward, and in many cases in advance of their initiation, much other pioneering has been done. Legal ground that was unmapped has been traversed speedily. "Cemetery statutes" and other old laws, not particularly hospitable to rural electrification, have been adapted to new uses. Modern corporate forms and cooperative principles have been fitted into the old framework. Meantime new legislation has cleared the way for electric-service cooperatives in many of the States.

Rural Electrification Administration engineers, carrying forward the work begun in project development and in law, have supervised the construction work on hundreds of projects. At the same time they have bent their efforts to slashing costs, both to make electricity cheaper and to widen the area of feasible and self-supporting electrification. With other engineers and with the contractors who build the lines, the Rural Electrification Administration engineers have brought average rural-line costs down to less than $1,000 a mile, where a few years ago costs of $1,500 to $2,000 were quite common. Several projects have been built for about $500 a mile.

The Engineers have assembled, coordinated, and improved the best practices and, by force of example and the results shown, stimulated the general adoption of these practices. Design and materials have been standardized and bettered. "Battleship construction" has given place to slim, strong poles, commonly shorn of cross arms and always uncluttered with useless hardware and gadgets. Span lengths have been approximately doubled. Conductors, adding the strength of steel reinforcement to the conventional copper and aluminum, have equipped the long-span lines to stand up under 3-inch loads of sleet and the terrific strain of 50- to 60-mile winds.

Rural Electrification Administration engineers, in August 1939, announced the development of a new, low-cost, small-capacity electric service (including transformer, lightning arrester, circuit breaker, and underground cable). The new installation promises to make the minimum comforts of electricity available to hundreds of thousands of low-income farms that could not earlier afford service, even at the steadily lowered costs achieved during the years since the Federal rural-electrification program started. Such developments, it is hoped, will widen considerably the area of economically feasible electrification and make a significant contribution to the social values inherent in rural electrification.

Following the development men, the lawyers, the engineers, and the construction crews, have come the utilization workers, acquainting the farmers with the manifold uses of electricity, building up the projects' sales of energy, enlarging the revenues from which the Government's loans must be repaid.

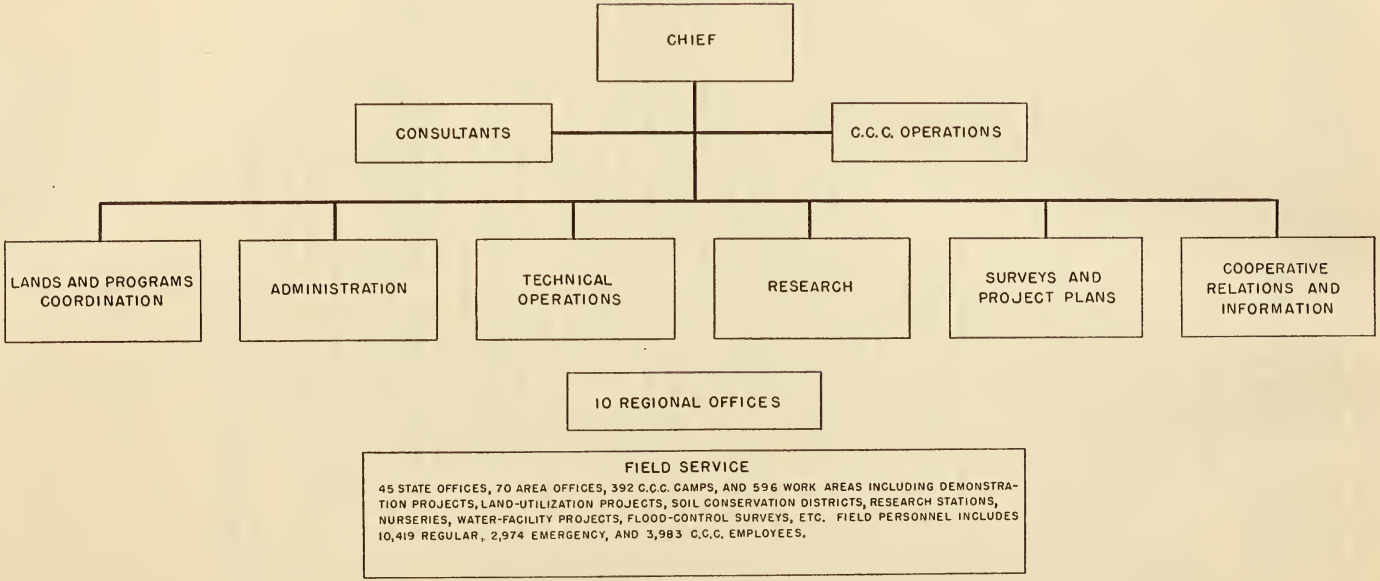
RURAL ELECTRIFICATION PROFITABLE

Through such efforts many farmers have learned that electricity's advantages need not be purchased at an out-of-pocket loss. There are a host of uses which are income-producing as well as time- and labor-saving, converting kilowatts into dollars. In poultry farming egg production is increased. On the fruit farm lights in the orchard improve the quality of apples by attracting harmful insects to their death. The need for effective milk cooling is increasing the demand for electrical equipment on dairy farms. Flowers are made to bloom out of season, with profit to the growers. In these and many other ways electricity is paying for itself directly.

Indirectly rural electrification produces values less tangible but no less real. The elimination of much of the drudgery from the farm and the farm home, and the installation of such comforts as modern plumbing with running water made possible by electric pumps, help to render farm life more attractive. Thus rural electrification may contribute, in some measure, to keeping the young people on the farm and to establishing a permanent agriculture.

With hundreds of projects in operation and many more soon to go into operation, the important task of project management has emerged. Rural Electrification Administration has assisted the projects in the employment of full-time superintendents and managers, appointed by the local boards of directors, subject to approval by the Administration, and paid by the project organizations. Some notion of the size of this task, as well as of the work done to date, may be obtained from a few figures on the status of the program. By September 1, 1939, the Administration had allotted funds totaling $241,715,293 to 649 borrowers in 44 States for constructing approximately 230,000 miles of line to carry service to some 600,000 farm families. As a result of the combined activity of the Administration and of private utilities, which greatly accelerated their rural extension programs after the Administration began operations, the number of American farms having central station electric service more than doubled between December 1934 and June 1939. It is estimated nevertheless that about 5,300,000 farms are still unelectrified. As a unit of the Department of Agriculture, the Rural Electrification Administration is continuing to take service to as many of these farms as possible.

SOIL CONSERVATION SERVICE


CHIEF
CONSULTANTS
C.C.C. OPERATIONS
LANDS AND PROGRAMS COORDINATION
ADMINISTRATION
TECHNICAL OPERATIONS
RESEARCH
SURVEYS AND PROJECT PLANS
COOPERATIVE RELATIONS AND INFORMATION
10 REGIONAL OFFICES
FIELD SERVICE
45 STATE OFFICES, 70 AREA OFFICES, 392 C.C.C. CAMPS, AND 596 WORK AREAS INCLUDING DEMONSTRATION PROJECTS, LAND-UTILIZATION PROJECTS, SOIL CONSERVATION DISTRICTS, RESEARCH STATIONS, NURSERIES, WATER-FACILITY PROJECTS, FLOOD-CONTROL SURVEYS, ETC. FIELD PERSONNEL INCLUDES 10,419 REGULAR, 2,974 EMERGENCY, AND 3,983 C.C.C. EMPLOYEES.

SOIL CONSERVATION SERVICE

The Soil Conservation Service administers a broad program of basic readjustment in the physical use and treatment of the land. Its primary function is to extend to all lands, except national forests, wildlife refuges, and certain other publicly administered areas, land use methods that will conserve and put to beneficial use the soil and water resources of the country.

The Service approaches this objective through research and direct action in six principal fields: (1) Soil and water conservation; (2) the acquisition and development of submarginal lands; (3) the examination and treatment of watersheds for purposes of flood control; (4) the development of small water facilities in arid and semiarid sections; (5) farm forestry; and (6) irrigation and drainage.

Since work in one of these fields complements or supplements work in another, there is a close coordination of all activities. For example, the development of springs, wells, stock ponds, and other water facilities in a given area usually is accompanied by the treatment of farm and grazing lands to control erosion and curb the rapid run-off of rain and snow waters. Such work guards against loss in normal moisture supplies, stabilizes underground water tables, and protects installations from accumulations of silt and erosional debris. In the same way, the purchase and development of submarginal land supplements flood-control work and promotes better land use. The program of the Service is thus composed, in effect, of a series of subprograms interlocked in a broad attack on the physical problems of land use.

The work of the Service is dovetailed with the work of other agencies of the Department dealing with other aspects of the land use problem. Action to correct physical maladjustments for example, is projected in unison with action by the Farm Security Administration and the Agricultural Adjustment Administration to correct social and economic maladjustments. The Forest Service takes an active part in such work as flood control and the development of purchased areas. The Extension Service with its network of county agricultural agents joins in educational activity.

ORIGIN AND DEVELOPMENT

For more than a century and a half after the founding of this country, there was little apparent concern for the conservation of soil and water resources. For the most part, Federal land policies and traditional attitudes toward the land were such as to encourage exploitation and eventual ruin.

The first tangible expression of Government interest in such problems came in 1929 with the establishment of soil erosion experiment

stations at 10 points in the United States. In 1933 research was followed by the creation of a Soil Erosion Service in the Department of the Interior to administer emegency funds for the control of soil erosion. Subsequent surveys revealed that more than 1 billion acres, or more than half of all the land in the country, was subject to erosion damage. Of this total, some 282,000,000 acres had been ruined outright or severely damaged by the washing or blowing away of topsoil. On the remainder, some 775,000,000 acres, erosion was causing damage in one way or another. Of cropland alone, it was estimated that 50,000,000 acres had been ruined outright for any further immediate cultivation, with another 50,000,000 acres in a condition about as serious. On an additional 200,000,000 acres of cropland, erosion was actively under way.

For approximately 18 months the Soil Erosion Service dealt with the problem of erosion by helping farmers and ranchers in representative areas to apply preventive measures. The object was to focus general attention on the problem and at the same time demonstrate practical methods for curbing the evil. With passage of the Soil Conservation Act of 1935, the Soil Erosion Service was transferred to the Department of Agriculture where it became a permanent bureau under the name Soil Conservation Service.

The scope of the organization was subsequently enlarged greatly. In 1936 the Secretary, under authority of the Omnibus Flood Control Act of that year, directed the Service to cooperate with other bureaus of the Department in the examination and treatment of lands for purposes of flood control. Later, the Service was assigned a major role in the development and installation of small water facilities on farm and range lands under the Water Facilities Act of 1937.

Additional functions were delegated in 1938 when the Secretary reorganized the internal structure of the Department. These included the purchase and development of submarginal land under title III of the Bankhead-Jones Farm Tenant Act, farm-forestry activities under the Cooperative Farm Forestry Act of 1937, and irrigation and drainage work administered by the former Bureau of Agricultural Engineering. Thus, what had been an agency concerned primarily with the control and prevention of soil erosion, became an agency concerned with all phases of the Department's land use program concerned with the actual treatment and handling of land.

LAND USE DEMONSTRATIONS

Demonstrations have been used by the Service as a principal means of propagating better land use practices in agriculture. In selected areas about the country the Service has entered into cooperative agreements with land operators and helped them to apply conservation measures.

In these demonstration areas, erosion-control devices, land use adjustments, and cropping changes were fitted to the natural needs and adaptabilities of the land on a field-by-field and farm-by-farm basis. Conservation practices on one farm reinforced those on another. In this work, the Service provided all technical planning and shared with the land operators in the cost of materials, labor, and other necessities.

By the end of 1938 demonstrations of this kind had been established in practically every major farming region in the United States. They represent a cross section of the soils, topography, climate, and prevailing farming systems of each region. In general, the conservation practices and land use adjustments put into effect are those suited for widespread use outside the demonstration areas.

In accordance with departmental policy requiring the exercise of local initiative and group responsibility, action by the Service is also carried out through local soil conservation districts duly constituted under State laws.

AIDS SOIL CONSERVATION DISTRICTS

In effect, these soil conservation districts are land use cooperatives in which farmers and ranchers pool their resources for community action. They are organized on a purely democratic basis for the express purpose of dealing with land use problems over large farming areas. District supervisors enter into agreements with individuals and help them carry out conservation work in much the same manner employed by the Service in its demonstration areas.

At the request of local officials, the Soil Conservation Service provides technical personnel to help districts formulate general plans and prepare detailed surveys and work plans for individual farms and ranches. It also grants monetary aid under certain conditions, loans equipment, and makes available C. C. C. labor assigned to its supervision. Where the use of submarginal lands within a soil conservation district obstructs or interferes with its program, the Service frequently utilizes its authority to purchase such areas and put them to better use. Farm-forestry activities and the treatment of watersheds for purposes of flood control are also carried out largely through soil conservation districts.

DEVELOPMENT OF WATER FACILITIES

Throughout the West there are numerous arid or semiarid sections where the lack of adequate water supplies is an obstacle to better use of the land. In many cases, however, this situation can be relieved by developing springs, wells, stock ponds, pumping systems, and other water facilities for single farms or small groups of farms. The Service, in cooperation with the Bureau of Agricultural Economics and Farm Security Administration, helps farmers and ranchers in work of this kind by furnishing technical assistance and aiding in the actual construction or installation work.

Those obtaining assistance in this field share as much as possible in the cost of projects and agree to adopt farm- and range-management plans worked out with the help of State and Federal land use specialists. Such plans provide for the use of soil- and water-conservation measures and cropping and tillage practices that will guarantee economic stability and at the same time assure the best possible use of the land.

IRRIGATION AND DRAINAGE

Action in the field of irrigation and drainage is confined largely to assisting organized irrigation or drainage districts with the repair and maintenance of structures. Such work is performed by C. C. C. camps assigned to the Service for this purpose.

ACQUISITION AND DEVELOPMENT OF SUBMARGINAL LAND

Throughout the country many are striving for an existence on land, which, because of the poor quality of the soil, lack of moisture, or other reasons, is unable to support farm families. The continued use of such lands frequently creates an erosion menace to adjoining good lands or increases flood and silting hazards. Much of the land is tax deliquent, and this condition leads to high costs of local government and other social and economic evils.

The Service purchases submarginal areas and puts them to the use to which they are best suited. In many cases, purchased areas are removed from cultivation and put into grass or trees. In others, they are developed as recreational centers or wildlife refuges.

Submarginal lands returned to grass are generally leased to farmers and ranchers in the immediate area under carefully regulated grazing systems. This assures safe and profitable use of purchased tracts, and at the same time enables stockmen to adopt better land use practices by increasing their grazing areas.

Following development, the administration of purchased areas frequently is turned over to State and local agencies.

COOPERATION IN FLOOD CONTROL

To a considerable extent, floods are aggravated, and sometimes caused, by the rapid run-off of rain and snow waters from agricultural lands. Eroded fields and pastures shed, rather than absorb, water. Gullies speed up surface drainage. The products of erosion clog stream channels, make them less able to handle flood flows, and impair the usefulness of downstream flood-control structures. On the other hand, land use readjustments that include curbs on the rate and volume of surface run-off and also measures to control erosion, tend to reduce flood crests and minimize silting hazards.

For this reason, the Soil Conservation Service plays an important role in the Department's program of upstream flood control under the Omnibus Flood Control Act of 1936 and subsequent legislation. In cooperation with the Forest Service and Bureau of Agricultural Economics, it makes extensive watershed surveys and assists in land-treatment work necessary to reduce the frequency and violence of floods. Such work includes the revegetation of critical areas, the installation of small upstream water-retardation devices, readjustments in cropping and tillage practices, the retirement of submarginal lands from cultivation, and other work of a similar nature.

Flood-control operations of this kind are carried out largely through soil conservation districts or other organized local agencies, and to the fullest extent possible are coordinated with downstream flood-control work.

RESEARCH PRECEDES ACTION

The broad program of the Soil Conservation Service is necessarily laid on a solid foundation of research. In all fields, land use action is guided by knowledge gained through scientific study and experiment.

Experiment stations maintained by the Soil Conservation Service in major agricultural regions about the country provide basic information bearing on a wide range of land use problems. Work at these stations includes thorough study of the causes, nature, and effect of erosion. Different methods for its control and prevention are subjected to testing and improvement. From measurements of the amount and rate of soil and water lost from plots under varied conditions of cover, topography, climate, and land use, the Service develops basic principles to guide its flood-control work. Economic research in connection with demonstrations assures the soundness of land use readjustments and directs the development of purchased areas along proper channels. Hydrologic investigations provide fundamental data for use in connection with the development of water facilities and irrigation and drainage work.

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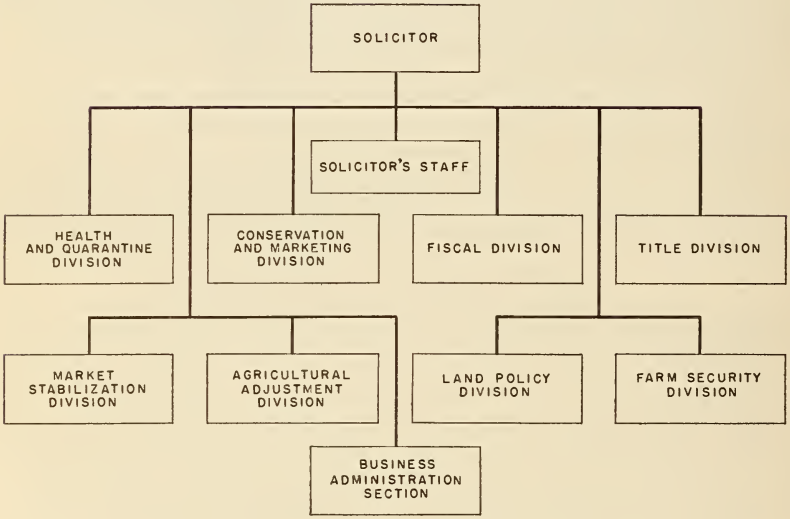
OFFICE OF THE SOLICITOR

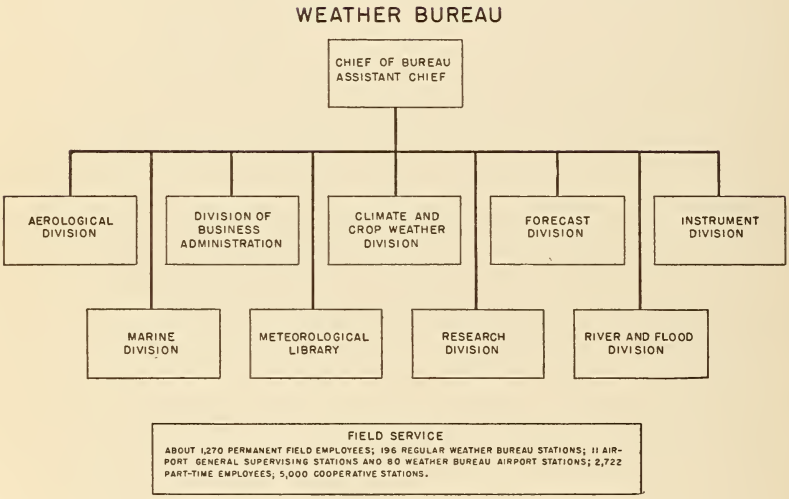


OFFICE OF THE SOLICITOR

The Office of the Solicitor is the law office of the Department, in compliance with a statute providing that "the legal work of the Department of Agriculture shall be performed under the supervision and direction of the Solicitor" (5 U. S. C. A., sec. 518). Among the duties performed by the Office are: Advising the Secretary and other administrative officials on legal problems in connection with all phases of their duties; assisting in the preparation of proposed legislative bills, administrative rules and regulations, orders, and proclamations; rendering to the Secretary and to other officials of the Department legal opinions construing and applying statutes, Executive orders, and administrative rules and regulations; drafting, examining, and construing contracts, deeds, mortgages, leases, and other documents; approving the organization of cooperative associations, soil conservation districts, and similar agencies and their eligibility for participation in departmental programs; examining evidence to determine whether there have been violations of acts administered by the Department and, in proper cases, recommending prosecution to the Attorney General; preparing pleadings and briefs in civil and criminal cases and equity proceedings involving the Department and laws administered by it, and cooperating with the Department of Justice in the handling of such litigation in the lower and appellate courts; representing the Department as counsel in hearings before the Secretary; handling the contacts of the Department with other governmental agencies, State and Federal, in legal matters; conducting administrative hearings, and issuing tentative findings, conclusions, and orders with respect thereto, under various acts administered by the Department; prosecuting applications for patents by Department employees where the subject of the patent is used in departmental work; examining titles to land authorized for purchase or on which loans will be made by the Department; considering and recommending appropriate disposal of claims for damage to property of the United States in the custody of the Department and claims against the Government for damage arising from operations of the Department.

The Solicitor is assisted by a corps of attorneys. The Office of the Solicitor in Washington is composed of divisions which specialize in the legal work incident to the different activities of the Department. In this manner, the Office seeks to be in a position to give expert advice on any legal question which may arise. In addition to the attorneys stationed in Washington, attorneys under the supervision of the Solicitor are located at convenient points throughout the country in order that they may be in personal contact with administrative officers and employees of the Department stationed in the field who may need legal aid.

The legal field embracing the activities of the Office is extremely broad, being limited only by the vast scope of the responsibilities assigned to the Department. A great variety of legal questions is to be expected, since such questions deal with numerous regulatory laws designed to protect the interests of agricultural producers, the interests of consumers, and the public generally; with the acquisition of land; with the administration of national forests, wildlife refuges, and community projects; with rural rehabilitation and farm tenancy; with the prevention of soil erosion; with the diversion and removal of agricultural surpluses; with agricultural conservation and adjustment; and with crop insurance.


WEATHER BUREAU
CHIEF OF BUREAU
ASSISTANT CHIEF
AEROLOGICAL DIVISION
DIVISION OF BUSINESS ADMINISTRATION
CLIMATE AND CROP WEATHER DIVISION
FORECAST DIVISION
INSTRUMENT DIVISION
MARINE DIVISION
METEOROLOGICAL LIBRARY
RESEARCH DIVISION
RIVER AND FLOOD DIVISION
FIELD SERVICE
ABOUT 1,270 PERMANENT FIELD EMPLOYEES; 196 REGULAR WEATHER BUREAU STATIONS; 11 AIRPORT GENERAL SUPERVISING STATIONS AND 80 WEATHER BUREAU AIRPORT STATIONS; 2,722 PART-TIME EMPLOYEES; 5,000 COOPERATIVE STATIONS.

WEATHER BUREAU

The Weather Bureau is primarily concerned with the furnishing of information on present, past, and future weather conditions over the land and sea. It renders such direct service as will best meet the immediate needs of agriculture, commerce, and transportation. Meteorology for this purpose is defined as that branch of science which treats of the atmosphere and its phenomena, especially those phenomena that constitute the weather.

Meteorological observations are made by the Weather Bureau for the purpose of forecasting the weather, for the accumulation of climatological data, for direct application to everyday activities, and for use in technical meteorological studies.

In addition to meteorological work, the Bureau observes the stage of the water in rivers and issues flood warnings and stage forecasts, and it conducts studies in solar radiation.

The functions of the Weather Bureau are defined in the duties prescribed for the Chief of the Bureau in the original act approved October 1, 1890. These activities are administered by project leaders stationed at Washington, D. C., through the agency of a large field organization embracing about 300 permanent field headquarters, at least 1 of which is in every State and important Territorial possession, and several thousand minor and cooperative stations with similar widespread geographical distribution.

HISTORICAL

The Weather Bureau came into being as a branch of the Signal Service of the War Department during 1870, under the provisions of a joint resolution of Congress approved February 9, 1870. This resolution authorized the Secretary of War to take meteorological observations at military stations throughout the United States and its Territories and to give notice by telegraph and marine signals of the approach and force of storms. This service was primarily for the benefit of navigation on the seacoast and the Great Lakes, but under a provision of the Appropriation Act approved June 10, 1872, it was extended to include the interior districts and the great rivers of the central part of the United States.

The benefits of the weather service were soon recognized by business interests and the general public, and its enlargement to include agriculture and commerce became necessary. This led to the conclusion that as a scientific bureau it could function better under civilian than under military control. Accordingly, on July 1, 1891, the Signal Service of the War Department was relieved of its meteorological duties, and the Weather Bureau of the Department of Agriculture was organized and charged with the responsibility for the future of meteorology in the United States.

FORECASTS AND WARNINGS

GENERAL

Forecasts are based on regular observations of meteorological conditions taken daily at approximately 7:30 a. m. and p. m., seventy-fifth meridian time, at about 300 observing stations in the United States, Canada, Alaska, and the West Indies, supplemented by reports from other countries and from ships at sea. When conditions warrant, special observations at selected points may be taken at other times and forwarded to a designated forecast center. Observations are coded for the sake of brevity and economy and for speed in transmission. Through a special telegraphic system set up for the purpose, regular 7:30 a. m. and p. m. reports are collected at the New York and Chicago telegraph centers and redistributed to such field stations as require them in their daily service to the public. Transmission of a report to the collecting center or centers and its duplication and dispatch to field stations scheduled to receive it, requires less than 45 minutes. The reports are decoded at receiving stations, and the meteorological information is made available to the public promptly.

General forecasts and warnings are based on meteorological data secured from these telegraphic reports of observations. Data are tabulated twice daily on base maps for study and interpretation by forecasters at the district forecast centers located at Washington, D. C., Chicago, Ill., New Orleans, La., Jacksonville, Fla., Denver, Colo., and San Francisco, Calif. Forecasts of weather and temperature; warnings of frosts, cold waves, storms, hurricanes, and other conditions for the entire United States; and forecasts of wind and weather for ocean areas adjacent to our coasts, are issued. Local and specialized forecasts are made at both district centers and local Weather Bureau stations. Forecasts and warnings are widely disseminated through the press and the mails, over the radio, and by telegraph and telephone, reaching practically every community in the United States and rendering useful service to the American public in nearly every phase of our national life.

MARINE FORECASTS AND WARNINGS

Extensive service is rendered by the Weather Bureau in the aid of navigation. Forecasts of wind and weather and warnings of storms at sea are based on the regular collections of reports from land stations and observations received twice daily, sometimes more frequently, by radio from ships. Storm warnings, flags during the day and lanterns at night, are displayed from steel towers and flagstaffs located at every harbor of any considerable importance along the Atlantic, Pacific, and Gulf coasts, and on the shores of the Great Lakes. Bulletins, containing weather information and forecasts for the benefit of ships at sea, are disseminated, principally by radio, regularly twice a day; supplementary advices are issued more frequently when severe storms are in progress. These bulletins contain reports on actual weather conditions over land and ocean areas, locations of storm centers, intensities of storms, and forecasts of speed and direction of movement of storms.

AIRWAY FORECASTS

Reports of weather conditions are transmitted hourly to central stations of the Bureau at important terminal airports, and there used by meteorologists as the basis for summarized statements and 6-hourly airway and terminal forecasts which are broadcast by the Department of Commerce radio stations, thus being made available to aircraft in flight as well as to interested persons on the ground. This service is supplemented by the longer period general forecasts, issued from the Bureau's six district forecast centers, which give the expected changes in conditions for comparatively large areas during the following 24 to 36 hours and which are therefore expressed in more general terms.

FIRE-WEATHER WARNING SERVICE

The Weather Bureau has established a special fire-weather warning service in the heavily forested areas of the far Western States, the upper Lakes region, New England, and the southern Appalachians region, as an aid in the prevention and suppression of forest fires. Studies have been made to determine the effects of topography, elevation, ground covering, and other factors on wind direction and force, temperature, and atmospheric humidity. These studies, together with current reports from a comprehensive network of forest substations furnish a basis for intensive, localized forecasts and warnings of impending weather conditions affecting the severity of fire hazard. These predictions are furnished by telephone, telegraph, and radio to the Forest Service and other forest-protection agencies. In the western districts, special mobile forecasting units equipped with two-way radio, proceed on call to the scene of fires, where special forecasts are made to cover weather changes in the specific fire zone.

HORTICULTURAL PROTECTION

In the Bureau's fruit-frost service, specialists cooperate with fruit growers in protecting orchards from damage by frost. The work consists in making temperature surveys to determine the relative liability of different localities to frost, in issuing forecasts and warnings, in experimenting to determine the most effective and economical methods of protection, and in giving advice to growers as to heating requirements for preventing frost damage. The specialists study the thermal relations of different localities of their districts and make a very definite forecast each day during the danger period of the lowest temperature expected during the ensuing night; fruit growers are notified through a special system of communication. This service was originally conducted principally in the far West, but in 1935 it was inaugurated in Florida also.

A special fruit-spraying service is given in several important fruit-growing districts as a guide in the application of sprays to trees. The efficiency of sprays, both as insecticides and as fungicides, is largely determined by the weather conditions under which they are applied. Orchardists therefore need information as to coming weather conditions. The project is intensively organized and conducted in New York and to a lesser degree in other important apple-growing States. A similar service is conducted as an aid to farmers during harvesting operations.

RIVERS AND FLOODS

The river and flood forecasting service of the Bureau is organized with its principal headquarters at the central office in Washington, and subsidiary district forecasting centers at advantageous points on the various rivers throughout the Nation. About 66 district river-forecast centers are maintained outside of Washington. Forecasts of day-to-day changes in the rivers are issued at the more important centers, while flood warnings are issued from all districts to about 600 cities, towns, and communities.

CLIMATOLOGICAL SERVICE

The demand for a detailed knowledge of the climate of the United States and its possessions led to the gradual development of an important and interesting feature of the Bureau's activities—the climatological service. In establishing a record of the climate, the Bureau uses the great body of observational data collected by thousands of cooperative observers and by the regular field personnel. These data are summarized and interpreted by Weather Bureau climatologists and comprise a complete climatology of the country in the form of monthly and annual bulletins.

Special weather services are maintained during the growing season of the principal crops. Also observations are made each morning at some 400 places in the grain and cotton areas; these are collected by telegraph and released within 2 hours. A weekly service is maintained for each State and for the country as a whole; weekly bulletins are issued summarizing the weather and its effect on crop growth and farming operations.

RIVER AND FLOOD SERVICE

The Weather Bureau, through its river and flood service, is responsible for forecasting river stages and floods in practically all of the navigable rivers of the Nation. The basic work of this service is the determination of the relation of rainfall and snowfall to the amount of water carried by the streams, which is accomplished through the maintenance of a network of precipitation- and stream-measuring stations in the various drainage basins throughout the country, including snow-measuring stations in the mountainous areas.

The hydrologic data thus obtained are made available to power-development plants, irrigation projects, city water plants, and, in fact, to all immediate users of water carried by streams; and are used by the Weather Bureau in making daily river-stage forecasts and in preparing flood warnings. The daily river-stage forecasts are primarily for the benefit of navigation, but they are also of great value to a large number of other interests that are dependent upon a foreknowledge of the rise and fall in the level of streams.

The flood-warning service is, perhaps, looked upon as the most valuable feature of the work. As soon as a flood warning is issued, the dissemination of the information is begun. Telegraph and telephone warnings are immediately sent to organized distributors, to the press, and to radio broadcasting stations. (See also Forecasts and Warnings: Rivers and Floods, supra.)

For administration and research the country is divided into 12 hydrologic regions where intensive studies on the relation of precipitation and run-off are being made; the information thus obtained is made available to the district forecast centers and to the other interests. Particular attention is being given to the problem of headwater stream forecasting where floods form quickly and for which quick action is necessary to get worthwhile warnings to the threatened valleys.

The average annual national flood loss is approximately 100 million dollars. It is believed that this amount can be materially reduced by increasing the period of the forecasts so that greater opportunity is provided for the removal of property and perishable goods and for the evacuation and protection of areas doomed to inundation by the oncoming flood. Plans are being made to establish the necessary additional hydrologic and river gaging stations in the many important tributary basins making up the major river systems, the cost of which is negligible compared to the consequent reduction in loss of life, in human misery, and in property damage.

MARINE AIDS

In marine meteorology the Weather Bureau collects observations from ships at sea to determine weather conditions over the oceans. Observations are made by masters and officers of the world's merchant marine without compensation other than free subscriptions to pilot charts and other publications. The data are charted, compiled, and studied in the interests of navigation and meteorology. They also form the basis of the meteorological information given on the pilot charts and in other publications issued by the Hydrographic Office of the Navy Department in cooperation with the Weather Bureau, under provision of an act of Congress approved June 16, 1910.

For information on marine forecasts see section on Forecasts and Warnings: Marine, page 228.

SERVICE FOR AERONAUTICS

The rapid development of flying activities in the past few years has necessitated the organization of a specialized service to take care of this need. Provision for the service was originally contained in section 5 (e) of the Air Commerce Act passed May 20, 1926; this is now superseded by section 803 of the Civil Aeronautics Act of 1938.

In order to promote the safety and efficiency of aircraft to the highest possible degree, the Chief of the Weather Bureau, under the direction of the Secretary of Agriculture, shall, in addition to any other functions or duties pertaining to weather information for other purposes, (1) make such observations, measurements, investigations, and studies of atmospheric phenomena, and establish such meteorological offices and stations as are necessary or best suited for ascertaining, in advance, information concerning probable weather conditions; (2) furnish such reports, forecasts, warnings, and advices to the Authority, and to such air carriers and other persons engaged in civil aeronautics as may be designated by the Authority, and to such other persons as the Chief of the Weather Bureau may determine, and such reports shall be made in such manner and with such frequency as will best result in safety in air navigation; (3) cooperate with any person employed by air carriers in meteorological service * * *.

As provided by the original authority, a detailed network of reporting stations has been organized and is now in operation along the principal Federal air routes.

For further details on airway forecasts see Forecasts and Warnings: Airway, page 229.

LIBRARY

The Weather Bureau library has the largest collection of meteorological literature in the world. It is extensively used by the technical staff of the central office, by the field stations of the Bureau, as well as by other Government organizations and private institutions, and by students of meteorology generally. In recent years the demands on the library have greatly increased because of both the expansion of the Weather Bureau service and the increasing interest in meteorological research. Nearly 200 periodicals are received, many of which deal solely with meteorology; all contain items of interest for meteorologists from time to time. The library also receives publications from meteorological services and institutes throughout the world.

METEOROLOGICAL RESEARCH

In keeping with the traditions set by the notable work of the earlier weather services from which it originated, the Weather Bureau has always sought to advance meteorology and its practical application by means of research. The investigations conducted under this program contribute to an increased understanding of meteorological phenomena and provide results that will eventually lead to improvements in the practical applications of meteorology, and to a general increase in the efficiency of meteorological services. With the twofold object of extending our knowledge of weather phenomena, and of advancing our understanding of the physical processes in the atmosphere that explain them, the Bureau maintains a research program of investigations of fundamental meteorological problems, both by theoretical studies and by observational methods, including the development of improved instruments. To improve and extend its service, the Bureau also conducts studies for the purpose of adapting the results of theoretical investigations to the needs of applied meteorology, including weather forecasting, aeronautical meteorology, flood warnings, and economic planning, and of effecting their application in the practical work of the Bureau. The complexity of meteorological phenomena is so great and the demands on the national services are increasing so rapidly in extent and in variety, that the need for continued research is constantly increasing rather than diminishing; and much of the necessary work is beyond the resources of any but Government organizations. The Weather Bureau is therefore making continual efforts to meet its proper obligations by seeking to strengthen and expand its research program.

Under allotments from the special research funds provided by the Bankhead-Jones Act, cooperative agreements with the Canadian Meteorological Service, the Bureau of Agricultural Economics of the United States Department of Agriculture, and various schools and universities, have been made for work on research problems of vital interest to meteorologists and others interested in the geophysical sciences.

Work is in progress on a dictionary of meteorological terms. The material for this dictionary consists of cards with much useful information to meteorologists compiled by the late C. F. Talman since 1908. Even in its present unpublished form the collection is of great value to the Weather Bureau, but its publication would enable the entire meteorological world to benefit from it. The library continues to add new words to this card file as they are found in the literature so that when this meteorological dictionary and reference book is published it will be up to date. It will give etymologies, definitions, literature references, and discussion of all the terms used in meteorology.

The Monthly Weather Review, which has been published regularly since January 1873, contains detailed meteorological tables and charts showing the weather conditions for the month over the United States and neighboring countries and oceans, and papers of interest on climatological and meteorological subjects.

SOLAR RADIATION INVESTIGATIONS

The work in solar radiation has for its object the determination of the solar thermal energy received at the surface of the earth, the brightness of the sky, and the intensity of daylight at different seasons of the year and under different atmospheric conditions. It includes the continuous observation of radiation received from the sun and the sky at different places in the United States and measurements of the turbidity of the atmosphere, a study of the influence of turbidity upon thermal and luminous solar radiation intensities, and the improvement and standardization of apparatus employed in radiation measurements. Such apparatus is now installed at 8 Weather Bureau stations, and through cooperation with other bureaus and with universities measurements obtained at 10 other stations are received. All these radiation data are summarized for publication in the Monthly Weather Review.

Solar radiation data are in demand not only for meterological and general climatological studies, but also for studies by horticulturists, botanists, plant physiologists, and zoologists; by the heating and air-conditioning industries; by illumination engineers; and by those interested in evaporation for various scientific and civil engineering purposes, and in studies regarding human health.

AIR-MASS ANALYSIS

Since 1935, increasing emphasis has been put on the application of air-mass analysis methods in the forecast and warning service, especially for airways, and in the research work of the Weather Bureau.

When the air over a large area of the earth, especially in polar or in tropical regions, where the circulation is often relatively weak and restricted for long periods, remains in the same general region for some time, it takes on distinctive properties of temperature, moisture, and stability up to great heights above the surface. Such a body of air is called an air mass. For example, when air remains for a long time over the regions of the Gulf of Mexico and Caribbean Sea, it becomes warm and moisture-laden, and is termed a tropical maritime air mass. Frequently an atmospheric current originates in one of

these areas and transports large quantities of air to distant parts of the earth, as, for example, when a great body of intensely cold air pours out from the Arctic and flows down over the globe to lower latitudes, sometimes covering the larger part of the North American Continent with its frigid winds. When air masses from widely separated places of origin, and with distinctly different properties, are brought into juxtaposition by the currents that are continually traversing the atmosphere, they tend to remain separated from one another; and it is at the interfaces where different air masses meet, or so-called frontal surfaces, that the processes involved in weather phenomena are in general most active, although many important phenomena also frequently take place within the body of an air mass.

When the synoptic weather data are plotted on a base map, the air-mass analysis comprises the identification and delimitation of the air masses, classification of them according to source region and characteristics, the tracing of their movements and progressive modifications from day to day, and determination of the associated physical processes and their relation to the attendant weather phenomena.

The analysis is quite distinct from the making of a forecast. To make a forecast of the future weather, the analysis must be followed by a determination of the expected displacements, transformations, and developments of the fronts, air masses, and pressure formations, and an estimate of the weather conditions that will accompany them.

The map analyzed by the air-mass method differs from the map depicting only isobars and isotherms in that the emphasis is placed on the position of the fronts and on the air-mass characteristics, rather than on the relative position of the Highs and Lows. Boundaries between the air masses along which the cold air is advancing and replacing warm air on the ground are cold fronts; those along which the warm air is advancing and replacing cold air at the ground are warm fronts. The source region, the modifications, and the air-mass properties are designated on the maps by a system of symbols.

An air-mass analyst visualizes the atmosphere not only in terms of the surface map but in three dimensions. As an aid to this, cross sections of the atmosphere are constructed from airplane and radio observations, and the properties of the air and positions of the fronts are studied in the vertical also.

Air-mass analysis has been given much encouragement by the aeronautical interests; in keeping with this it is very helpful to the airplane pilot. It gives him a physical picture of the upper atmosphere and in this way it enables him to visualize what he may expect in the way of weather along the course during his flight. For this reason, airway forecasts are made in terms of frontal types and air-mass characteristics.

Air-mass analysis is important to the forecaster because it helps to replace the empirical rules of forecasting with a definite physical basis for analyzing and determining the movement of disturbances in the atmosphere.

INSTRUMENTS AND APPARATUS

The Instrument Division of the Weather Bureau has for its primary functions the selection, procurement, and testing of instruments and instrumental apparatus for the use of the Weather Bureau in its regular observational program and in special investigations; designing of new instruments and making of improvements in existing ones; planning exposures of such instruments; maintenance of the instrumental and storm-warning display equipment in the field; and instruction of the personnel in their use. There is maintained in this Division a testing and designing section in which instruments are tested and new models designed and an instrument shop in which first models of new designs are constructed. Recently, through cooperation with the Bureau of Standards, instrument companies, and schools, the Weather Bureau has been carrying on a program for the development of various types of radiometeorographs.

AEROLOGICAL INVESTIGATIONS

The upper-air observations are made daily by means of airplanes and balloons. Kites were formerly used, but these have been abandoned, owing to the great superiority of airplanes and balloons for this purpose. The observations with airplanes are made at present at 6 Weather Bureau stations only, and provide information daily concerning temperature, humidity, pressure, cloud heights, and cloud thickness, up to 15,000 or 20,000 feet. Similar data are obtained at 6 Weather Bureau stations by radiometeorograph sounding balloon observations to heights of 30,000 to 60,000 feet. In addition, through the cooperation of the Army and the Navy and the Canadian Government, 3 radiometeorograph and 14 airplane observations are obtained almost daily.

Upper-air wind velocities and directions are determined four times daily at some 70 Weather Bureau stations. For this purpose pilot balloons are released and observed through a theodolite. Since these balloons are inflated to a definite "lift," they rise at a known rate and from the elevation and azimuth readings made each minute the wind speed and direction are readily determined.

The data secured by the methods above outlined are used in giving current information concerning upper-air conditions to pilots; in providing valuable aids in forecasting, both for the general public and for aeronautics; and as a basis for technical studies designed to increase the effectiveness of the service.

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AN AGRICULTURAL CHRONOLOGY

1776—John Adams introduces resolutions in Continental Congress to encourage agriculture.

1796—George Washington in his last annual message makes an appeal for a national board of agriculture.

1820—House of Representatives appoints agricultural committee.

1825—Senate appoints agricultural committee.

1839—Congress appropriates $1,000 to collect and distribute seeds, conduct agricultural investigations, and collect agricultural statistics. Patent Office assumes the work.

1862—Organic Act (May 15, R. S. sec. 520) establishes the Department of Agriculture for the purpose of acquiring and diffusing among the people of the United States information relating to agriculture.

1862—First Homestead Act (May 20, ch. 75, 12 Stat. 392).

1862—First Morrill Act (July 2) donates land for colleges of agricultural and mechanic arts.

1884—Act of May 29 (23 Stat. 31) designed to prevent the spread of contagious diseases among cattle. It establishes the Bureau of Animal Industry.

1887—Agricultural Experiment Stations Act (Mar. 2, 24 Stat. 440) authorizes the establishment, under the direction of the land-grant colleges for which provision was made by the act of July 2, 1862 (12 Stat. 503), of experiment stations to conduct experiments relating to agricultural subjects.

1889—Act of February 9 (25 Stat. 659) makes the Department of Agriculture an executive department.

1890—Second Morrill Act (Aug. 30) provides for the further endowment of land-grant colleges.

1890—The Weather Service Act (Oct. 1, 26, Stat. 653) establishes the Weather Bureau in the Department of Agriculture to forecast the weather, issue storm warnings, etc.

1891—National-forest system begins. Congress authorizes the President to set aside forest reserves from the public domain.

1905—Act of February 1 (33 Stat. 628) places under the jurisdiction of the Secretary of Agriculture the protection of the national forests.

1905—Animal Quarantine Act (Mar. 3, 43 Stat. 1264) prevents the spread of the diseases of livestock by regulating their interstate movement from areas affected with contagious diseases.

1905—Act of March 3 (33 Stat. 1269) prohibits the interstate transportation of enumerated insect pests.

1906—Food and Drugs Act (June 30, 24 Stat. 768) prohibits the shipment in interstate commerce of articles of food and drug that are adulterated or misbranded as those words are defined in the act and authorizes seizure of the goods and criminal prosecution of the shipper.

1906—Meat Inspection Act (June 30, 34 Stat. 674–679) authorizes inspection of slaughtering or packing establishments of meats moving in interstate or foreign commerce and the destruction of condemned meats.

1908—Inspection of Dairy Products for Export Act (May 23, 35 Stat. 254) provides for the inspection and certification as to purity and quality of dairy products intended for export and the marketing, stamping, and labeling of such products.

1910—Insecticides Act (Apr. 26, 36 Stat. 331) prohibits the transportation or selling in interstate commerce of adulterated or misbranded insecticides and fungicides and provides for the seizure of adulterated or misbranded insecticides and fungicides.

1911—Weeks Act (Mar. 1, 36 Stat. 961) authorizes States to enter into compacts for the conservation of forests and water supplies, and sets up the National Forest Reservation Commission to pass upon recommendations of the Secretary for the purchase of lands necessary to the regulation of the flow of navigable streams.

1912—Plant Quarantine Act (Aug. 20, 37 Stat. 315) regulates the importation and interstate movement of plants, plant products, and other commodities to prevent the introduction into and the spread within the United States of injurious plant diseases and pests.

1912—Federal Seed Act (Aug. 24, 37 Stat. 506), as amended, prohibits the importation into the United States of seeds which are adulterated or unfit for planting purposes and regulates the transportation in interstate commerce of adulterated or misbranded seeds, and provides for criminal prosecutions of any person knowingly violating the provisions of the act.

1914—Agricultural Extension Act of May 8 (38 Stat. 372) authorizes cooperative work with the land-grant colleges in giving instruction in agriculture and home economics to persons not attending said colleges.

1916—Federal Farm Loan Act (July 17, 39 Stat. 360) provides for the establishment of the Federal land banks, national form loan associations, and joint stock land banks, empowered to make long-term loans on first mortgages on farm lands and to issue farm-loan bonds secured thereby.

1916—Grain Standards Act (Aug. 11, 39 Stat. 482) provides for uniformity in the grading of grain by authorizing the Secretary of Agriculture to establish standards of quality and condition of grain.

1916—United States Cotton Futures Act (Aug. 11, 39 Stat. 476) lays a tax of 2 cents on each pound of cotton involved in any contracts of sale of cotton for future delivery upon exchange unless certain types of contracts are used.

1916—Warehouse Act (Aug. 11, 39 Stat. 486) provides for the licensing by the Secretary of Agriculture of warehouses in which agricultural commodities are stored for shipment in interstate commerce.

1921—Packers and Stockyards Act (Aug. 15, 42 Stat. 159) regulates the business practices of packers in interstate commerce and of stockyard owners or operators and the commission merchants and others operating on yards posted by the Secretary of Agriculture in compliance with the act. It prohibits unfair, unjustly discriminatory, and deceptive practices and devices.

1922—Commodity Exchange Act, known as the Grain Futures Act (42 Stat. 998), until amended June 15, 1936, regulates the exchanges, commission merchants, and brokers who deal in future contracts covering wheat, cotton, rice, corn, oats, barley, rye, flax, seed grain, sorghums, mill feeds, butter, eggs, and potatoes. It provides for the elimination of certain practices such as manipulation of the market, corners and squeezes, and making of false reports. Commission merchants and floor brokers are required to register with the Secretary of Agriculture.

1923—Naval Stores Act (Mar. 3, 42 Stat. 1435) provides for the promulgation by the Secretary of Agriculture of official standards for resin and turpentine and requires that all resin and turpentine shipped in interstate commerce shall be sold under or by reference to such standards.

1923—Cotton Standards Act (Mar. 4, 42 Stat. 1517) provides for the establishment of standards of quality of cotton and forbids the use of other than official standards in transactions in interstate commerce and in the publication of prices or quotations determined in or in connection with such transactions and authorizes an inspection service.

1923—Agricultural Credits Act (Mar. 4, 42 Stat. 1454) amends the Federal Farm Loan Act by Authorizing the creation of the Federal intermediate credit banks to make loans to and discount paper for institutions and agencies that loan directly to farmers.

1926—Cooperative Marketing Act (July 2, 44 Stat. 802) authorizes and directs the Secretary of Agriculture to create a division of cooperative marketing to conduct research on cooperative associations and to disseminate information with respect thereto and to aid those engaged in cooperative marketing or other agricultural cooperative activity.

1927—Import Milk Act (Feb. 15, 44 Stat. 1101) is designed to prevent the importation into the United States of milk and cream that do not comply with the health requirements specifically designated therein.

1927—Produce Agency Act (Mar. 3, 44 Stat. 1355) makes it a criminal offense for any person receiving fruits, vegetables, melons, dairy or poultry products, or perishable farm products in interstate commerce for or

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on behalf of another to fail truly and correctly to account therefor, or to make false reports or statements relating to the handling or disposition of the same.

1927—Act of March 3 (44 Stat. 1372), as amended to 1937, authorizes the Secretary of Agriculture to collect and publish cotton statistics, to require certain persons to furnish information upon which to base statistics, to make available to requesting producers classification of cotton produced by them, and to make public market information on cotton, issue crop and acreage reports and make regulations to effectuate the purposes of the act.

1929—Agricultural Marketing Act (June 15, 46 Stat. 11) authorizes the establishment of a revolving fund of $500,000,000 for use by the Federal Farm Board in making loans to cooperative associations and to stabilization corporations to aid in preventing and controlling surpluses in any agricultural commodity through orderly production and distribution, and to prevent excessive fluctuations in prices of such commodities.

1930—Foreign Agricultural Service Act (June 5, 46 Stat. 497) authorizes the establishment of the foreign agricultural service for the purpose of acquiring information regarding quality, competition, and demand for agricultural products, and the production, marketing, and distribution of such products in foreign countries.

1930—Perishable Agricultural Commodities Act (June 10, 46 Stat. 531), as amended, requires the licensing of commission merchants, dealers, and brokers handling fresh fruits and vegetables in interstate commerce, and enumerates certain kinds of unfair conduct which it declares unlawful. The Secretary of Agriculture is authorized to award reparation for damages resulting from violation of the act.

1932—Emergency Relief and Construction Act (July 21, 47 Stat. 709) authorizes the establishment of regional agricultural credit corporations as temporary emergency institutions to make direct loans to farmers and stockmen for application to agricultural pursuits (including crop production, or raising, breeding, fattening, or marketing of livestock). These corporations are now in the process of liquidation.

1933—Emergency Farm Mortgage Act (May 12, 48 Stat. 31) authorizes the Farm Loan Commissioner (later Land Bank Commissioner) to make loans of a more or less emergency character to farmers on first or second mortgages on real or personal property, including crops.

1933—Agricultural Adjustment Act (May 12, 48 Stat. 31), several times amended, to establish and maintain such balance between the production and consumption of agricultural commodities and such marketing conditions therefor as would reestablish prices to farmers at a level that would give agricultural commodities a purchasing power with respect to articles that farmers buy equivalent to the purchasing power of agricultural commodities in the base period (August 1909–July 1914, except August 1919–July 1929 for tobacco and potatoes).

1933—Farm Credit Act (June 16, 48 Stat. 257) authorizes the Governor of the Farm Credit Administration to organize and charter production credit corporations and production credit associations for the purpose of providing short-term credit for general agricultural purposes. In addition, this act authorizes the creation of "banks for cooperatives" to make loans to cooperative associations in order to aid them in financing the handling of readily marketable agricultural commodities, and for other purposes.

1934—Federal Farm Mortgage Corporation Act (Jan. 31, 48 Stat. 344) creates the Federal Farm Mortgage Corporation to aid in financing the lending operations of the Land Bank Commissioner and the Federal land banks in connection with the farm debt refinancing program begun in the spring of 1933.

1934—Sugar Act (Jones-Costigan Act) (May 9, 48 Stat. 670) enacted as amendment to the Agricultural Adjustment Act and later amended, provides for making benefit payments to producers of sugar, a tax on the processing of sugar, and quota allotments to restrict the amount of sugar imported as well as the amount moving in interstate commerce.

1934—Federal Credit Union Act (June 26, 48 Stat. 1216) authorizes the Governor of the Farm Credit Administration to charter Federal credit unions for the purpose of making loans to members for provident or productive purposes. Membership in Federal credit unions is limited to group having a common bond of occupation or association, or to groups within a well-defined neighborhood, community, or rural district.

1935—Soil Erosion Act (Apr. 27, 49 Stat. 163) establishes the Soil Conservation Service in order to prevent soil erosion and thereby preserve natural resources, control floods, maintain the navigability of rivers and harbors, and carry out other public purposes. The Service is authorized to conduct investigations and research, carry out preventive measures either on Federal lands or by cooperative agreements with agencies and persons controlling other lands, and contribute services, equipment, money, or materials in connection with such operations.

1935—Act of June 29 (49 Stat. 436) authorized the Secretary of Agriculture to conduct research into basic laws and principles of agriculture. It also provides for the development of extension work.

1935—Section 32 of the act to amend the Agricultural Adjustment Act, and for other purposes (approved Aug. 24, 49 Stat. 750), authorizes the Secretary of Agriculture to make payments for the purpose of encouraging the exportation and the domestic consumption of agricultural commodities and products thereof and, in order to reestablish farmers' purchasing power, to make payments in connection with the normal production of any agricultural commodity for domestic consumption.

1936—Soil Conservation and Domestic Allotment Act (Feb. 29, 49 Stat. 1148) stresses as its objective, in addition to those present in the Soil Erosion Act, the preservation and improvement of soil fertility and the promotion of the economic use and conservation of lands, by the encouragement of soil-conserving and soil-rebuilding practices rather than the growing of soil-depleting commercial crops. By the terms and the act, appropriations may be made available to the States upon their passing an approved State plan which will carry out the objectives of the act. Pending the enactment of State legislation, the statute permits payments to individual agricultural producers.

1936—Act of April 26 (49 Stat. 1239) establishes Congressional consent for tobacco-producing States to enter into "essentially uniform" compacts controlling production of or commerce in tobacco for the purpose of enabling growers to receive fair prices, and empowers the Secretary of Agriculture to advance funds to States, subject to repayment, to defray administrative expenses arising out of compacts, to make loans to Georgia Tobacco Belt producers, and to render official advice and make Department records, information, and facilities available to compacting parties.

1936—Rural Electrification Act (May 20, 49 Stat. 1363) creates and establishes the Rural Electrification Administration as an agency of the United States. To its jurisdiction were transferred the functions, property, and personnel of the Rural Electrification Administration created by Executive Order No. 7037, dated May 11, 1935. The Administrator is authorized and empowered to make loans to persons, corporations, States, Territories, subdivisions, and agencies thereof, municipalities, peoples utility districts, and cooperative, nonprofit, or limited dividend associations organized under the laws of any State or Territory of the United States, for the purpose of financing the construction and operation of generating plants, electric transmission and distribution lines, or systems for the furnishing of electric energy to persons in rural areas who are not receiving central-station service. Loans are also authorized for the purpose of financing the wiring of premises of persons in rural areas and the acquisition and installation of electrical and plumbing appliances and equipment.

1936—Flood Control Act of June 22 (49 Stat. 1570) authorizes the Secretary of Agriculture to conduct investigations of watersheds and measures for run-off and water-flow retardation. The act of August 28, 1937 (50 Stat. 876), and the Flood Control Act of 1938, approved June 28, 1938, (52 Stat. 1215), augment the 1936 act by authorizing the Secretary of Agriculture to examine and survey for water-flow retarda-

tion and soil-erosion prevention purposes the watersheds of all water ways which the Secretary of War is authorized to survey for flood-control purposes, and to undertake active measures for water-flow retardation in accordance with plans approved by the Secretary of Agriculture.

1937—Act of January 29 (50 Stat. 5) authorizes the Governor of the Farm Credit Administration to make loans for planting, cultivation, and harvesting of crops, and for feed for livestock, upon the security of a first lien on the crop or the livestock. During prior years, beginning in 1918, similar loans of an emergency character were made from funds provided by Congress.

1937—Cooperative Farm Forestry Act (May 18, 50 Stat. 188) designed to aid agriculture, increase farm-forest income, conserve water resources, and increase employment by cooperation between the Secretary of Agriculture and colleges, forest agencies, and individual farmers in planting trees and shrubs, in establishing and managing farm-forests and in developing nursery sites for this purpose.

1937—Agricultural Marketing Agreement of 1937 (June 3, 50 Stat. 246) authorizes the Secretary of Ariculture to enter into marketing agreements and, in the case of certain specified commodities, to issue orders regulating the handling of agricultural commodities by fixing the grade, size, or quantity of such commodities that may be shipped and, in the case of milk, by fixing the minimum prices to be paid producers.

1937—Act of June 28 (Public, No. 165, 50 Stat. 323), as amended, continues the existence of the Federal Surplus Commodities Corporation as an agency of the United States, under the direction of the Secretary of Agriculture, until June 30, 1942. The Corporation was first organized as the Federal Surplus Relief Corporation and was granted a charter by the State of Delaware on October 4, 1933. In 1935 the name of the Corporation was changed to the Federal Surplus Commodities Corporation, inasmuch as its activities become largely concerned with the disposition of surplus agricultural commodities. Public, No. 165, supra, provides, in part, that, in carrying out the provisions of clause (2) of section 32 of the act approved August 24, 1935 (49 Stat. 774), as amended, the Secretary may transfer funds, appropriated by section 32, to the Federal Surplus Commodities Corporation for the purpose of encouraging the domestic consumption of agricultural commodities and the products thereof by donating them for relief purposes or by increasing their utilization among low-income groups.

1937—Bankhead-Jones Farm Tenant Act (July 22, 50 Stat. 522) authorizes (1) loans to farm tenants and other eligible individuals to enable them to acquire farms; (2) rehabilitation loans to eligible individuals for operating and subsistence needs; and (3) a program of land conservation and land utilization, including the retirement of submarginal lands.

1937—Act of August 28 (50 Stat. 869) recognizes the wastage and incomplete utilization of water resources on farm, grazing, and forest lands resulting from inadequate water-storage facilities, and authorizes the Secretary of Agriculture to formulate and keep current a program of projects for construction and maintenance of ponds, reservoirs, wells, check-dams, etc.; to sell, lease, or allow the free use of such facilities; to cooperate with agencies or persons in promoting the act and to acquire lands when necessary therefor.

1937—The Sugar Act of 1937 (Sept. 1, 50 Stat. 903) provides for the regulation of sugar marketing in interstate and foreign commerce by the imposition of quotas on the continental United States, the off-shore possessions and foreign countries; protects consumers against excessive prices by authorizing the Secretary of Agriculture to adjust his estimate of consumption requirements, which forms the basis of the quotas, so that under ordinary circumstances the total supply of sugar made available will not be less than that necessary to give consumers a per capita consumption equal to the average of the 2-year period 1935–36; and, in order to adjust the marketings of sugarcane and sugar beets in the continental United States, Hawaii and Puerto Rico to the sugar marketings permitted under the quota provisions, provides for conditional payments to producers in those areas.

1938—Agricultural Adjustment Act of 1938 (Feb. 16, 52 Stat. 31) empowers the Secretary of Agriculture to conserve the Nation's soil resources and promote their efficient use as part of a permanent farm policy; to assist in the marketing of farm products for domestic consumption and export by establishing acreage allotments for which payment may be made to cooperating farmers; to regulate interstate commerce in cotton, wheat, corn, tobacco, and rice, so as to minimize violent fluctuations in supplies, marketing and prices of farm commodities, protect consumers by maintaining adequate reserves of food and feed, and assure farmers a fair share of national income.

1938—Federal Crop Insurance Act (Feb. 16, 52 Stat. 72) creates as an agency of the Department of Agriculture, in order to promote national welfare by alleviating the economic distress caused by wheat-crop failures, through the maintenance of purchasing power of farmers, and by stabilizing supplies of wheat, the Federal Crop Insurance Corporation, with a board of three directors appointed by the Secretary of Agriculture and empowered, among other things, to conduct researches, surveys, and investigations relating to crop insurance for wheat and other agricultural commodities, and, commencing with the wheat crop of 1939, to insure producers against loss of yields and to purchase, handle, store, insure, provide storage facilities for, and sell wheat, and pay any expenses incident thereto in connection with crop insurance.

1938—Insect Control Act (May 9, 52 Stat. 344) empowers the Secretary of Agriculture to cooperate with States, organizations, or individuals in applying such methods of control to incipient or emergency outbreaks of insect pests, or plant diseases, as may be necessary, and authorizes annual appropriations for such purposes.

1938—Federal Food, Drug, and Cosmetic Act (June 25, 52 Stat. 1040) prohibits the movement in interstate commerce, as defined therein, of articles of food, drugs, devices, and cosmetics that are adulterated or misbranded; of any new drug that the Secretary, upon the application filed with him, finds to be unsafe under the conditions prescribed, recommended, or suggested in its labeling; and of any article of food of a class that may be contaminated under certain conditions if the Secretary has not issued a permit as to the same. The act authorizes the seizure of such articles and provides for injunction against and prosecution of their shipper.

1939—Act of March 25 (Public, No. 9, 76th Cong.) amends the Soil Conservation and Domestic Allotment Act so as to authorize the Secretary of Agriculture to make advances to producers for the purpose of assisting them to insure their crops with the Federal Crop Insurance Corporation.

1939—The Federal Seed Act (Aug. 9, 53 Stat. 1275) prohibits the transportation or delivery for transportation in interstate commerce of agricultural or vegetable seeds, unless the containers bear labels giving required information concerning the quality of the seeds, and unless germination tests have been completed within prescribed periods prior to transportation or delivery for transportation in interstate commerce. The act also prohibits the shipment of seeds which are falsely labelled, falsely advertised, improperly stained, etc.; sets up standards for seeds which are imported into the United States; authorizes the condemnation of seeds shipped in violation of the act; and provides for injunctions against and prosecution of noncomplying shippers. This statute repeals the Importation of Adulterated Seeds Act of 1912, as amended, except the notices with respect to imported alfalfa and red-clover seeds promulgated by the Secretary of Agriculture under the 1912 act.

1939—Act of Aug. 11 (Public, No. 387, 76th Cong.) facilitates the execution of arrangements for the exchange of surplus agricultural commodities produced in the United States for reserve stocks of strategic and critical materials produced abroad.

1939—Reorganization Act of 1939 (April 3, 53 Stat. 561) authorize the President to submit to Congress plans involving the transfer, consolidation, or abolition of executive agencies, which plans shall become effective in 60 days unless a disapproving concurrent resolution has been passed in the meantime. Pursuant to the provisions of this

act four plans have been submitted. The first two have been effectuated. The 60-day period has not yet elapsed (April 13, 1940) with respect to the last two. These four plans provide as follows:

Plan No. I, April 25, 1939.—Transfers to the Department of Agriculture, the Farm Credit Administration, the Federal Farm Mortgage Corporation, and the Commodity Credit Corporation and associated agencies; and transfers Bureau of Public Roads from the Department of Agriculture to the newly created Federal Works Agency.

Plan No. II, May 9, 1939.—Transfers from the Department of Agriculture (1) to the Department of State, the functions of the Secretary of Agriculture with respect to the Foreign Agricultural Service (other than functions with respect to such services pertaining to activities in the United States and to the compilation, publication, and dissemination of information), and (2) to the Department of the Interior, the Bureau of Biological Survey; and transfers to the Department of Agriculture, the Rural Electrification Administration.

Plan No. III, April 2, 1940.—Consolidates the Division of Marketing and Marketing Agreements of the Agricultural Adjustment Administration and the Federal Surplus Commodities Corporation into a single agency to be known as the Surplus Marketing Administration.

Plan No. IV, April 11, 1940.—Transfers from the Department of Agriculture (1) to the Department of the Interior, the activities of the Soil Conservation Service relating to soil and moisture conservation on lands under the jurisdiction of the Department of the Interior; (2) to the Department of Commerce, the Weather Bureau, with a provision, however, that the Department of Agriculture may continue to make snow surveys and conduct research concerning relationships between weather and crops, long-range weather forecasting, and relationships between weather and soil erosion; and (3) to the Federal Security Administration, the Food and Drug Administration, except those functions relating to the administration of the Insecticide Act of 1910 and the Naval Stores Act.

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